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Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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CHEVROLET'S OUTPUT UP; FORD'S OFF

Ranking of States in 1930 In Respect to Car Sales Shows Changes From 1929

New York and Pennsylvania Retain First and Second Places, but California and Illinois Top Ohio and Michigan

NEW YORK, Dec. 5.—Some important changes have taken place this year in the ranking of the various states in respect to the sale of new passenger cars, according to the registration statistics for the first ten months of the year.

Several changes have taken place among the ranking of the first ten states in point of sales volume. While New York has retained its place at the top of the list and Pennsylvania has maintained its position as the second leading market for cars in the United States, California stepped up from its fifth place in 1929 to third position this year.

To make way for California, Ohio, in third place last year, dropped to fifth this year, and Michigan, in fourth placed last year, dropped to sixth in 1930. Another improvement in ranking was made this year by Illinois, which stepped up from sixth place in 1929 to fourth place this year.

Eighteen states finished the first ten months of this year higher up in the sales ranking than in the corresponding period of last year. These states were California, Illinois, Missouri, Iowa, Virginia, Connecticut, Tennessee, Washington, Maryland, Florida, Georgia, West Virginia, Oregon, Maine, Rhode Island, New Hampshire, Vermont and Delaware. The District of Columbia also would have been higher on the list had it been included among the states. Its position this year would have been thirty-fourth, as compared with thirty-ninth in 1929.

It will be noted from the accompanying tabulation that no state among the twelve states of New

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F. J. HAYNES JOINS H. H. FRANKLIN CO.

Syracuse, N. Y., Dec. 5.—H. H. Franklin, president of the H. H. Franklin Manufacturing Company, announces that F. J. Haynes becomes vice-president and director of company and assumes his new executive duties next Monday. Mr. Franklin said: "After an interval of eighteen years Mr. Haynes rejoins this organization in which he last served as factory manager, leaving here to join Dodge Brothers, which later he headed as president."

F. J. Haynes

CANADIAN CASINGS EXPORTS DECREASE IN OCTOBER

Washington, Dec. 5.—Exports of automobile casings from Canadian factories during October totaled 85,849, as compared to 87,808 in September, the rubber division of the Commerce Department announced today. The average declared value per casing exported in October was $10.27, as compared to $9.97 in September and $9.58 in August.

SENATE SIDETRACKS PARKER BUS BILL

Special from A. D. N. Washington Bureau

Washington, Dec. 5.—The Parker-Couzens bill, designed to place interstate operation of motor buses under the control of the Interstate Commerce Commission, today is as dead as a door nail.

Hope of its enactment at this short session of Congress was virtually abandoned when the Senate voted, 51 to 29, to recommit the measure to the Committee on Interstate and Foreign Commerce, of which Senator Couzens of Michigan is chairman.

The overwhelming vote against further consideration of the badly battered bill which had the powerful backing of the country's railroad interests, indicates clearly that the Senate is glad to get rid of a piece of legislative dynamite that has bothered Congress for four years.

Senator Couzens' committee already is overburdened with work, including the railroad consolidations bill, and railroad valuations and interstate power bills, all of which are considered far more important than the motor bus legislation.

Hence no further attempt will be made to pass the motor bus bill at this session.

Senator Couzens charged that the railroad lobbyists were responsible for "killing the bill" in its present form, as amended after it came from the House, because, if enacted, it would have prevented the roads from controlling bus lines.

There was strong Senate opposi-

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CADILLAC RETAILED 2,010 16-CYLINDER MODELS SINCE MARCH

Detroit, Dec. 5.—Two thousand and ten sixteen-cylinder Cadillacs were delivered at retail in the nine months since shipments of this leader of the Cadillac line started last March, General Sales Manager J. C. Chick announced today.

The majority of sales were made in metropolitan areas, as might be expected, but Mr. Chick declares distribution among smaller communities was surprisingly large.

Also, it is pointed out, the Cadillac sixteen accounts for one-third of the total sales in its price class, according to registration figures.

G. M. UNIT SETS NEW RECORD FOR NOVEMBER PRODUCTION

Turns Out 47,257 Cars and Trucks; Ford Produces 52,000, Decline of 52% From Corresponding 1929 Period

DETROIT, Dec. 5.—World production of motor cars and trucks was announced here today by the Ford Motor Company as approximately 52,000 units, which compares with 108,000 in November, 1929, a drop of 52.8 per cent. On the other hand, Chevrolet has just announced that it produced during November this year 47,257, as against 46,125 units in the same month of 1929. This production is the heaviest in Chevrolet history for that month.

Ten months' domestic sales of Ford vehicle units amounted to 992,370 this year, as compared with 1,188,720 units in the same period of 1929. Commercial cars accounted for 176,709 of this total, while last year the ten months' sale of commercials was 196,465. Chevrolet's ten months' sales this year amounted to 566,623, which is 20 per cent. below the record for the similar period in 1929.

The record established in November by Chevrolet was due to the announcement of the company's 1931 models. So spirited has been the demand for these new offerings that President Knudsen of Chevrolet has set a production schedule of 60,000 units for December, which will again be the record for his company for that month of the year by some 20,000 units. Mr. Knudsen has further announced that January production will be set at 71,000 and February at 75,000 vehicle units. He declared that by January his company will have 36,000 men at work and that during the spring months employment in Chevrolet plants will closely approach if not exceed the levels of 1929. All this is in line with previous statements that Chevrolet during 1931 would produce 1,000,000 vehicle units.

In this connection much interest

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KNUDSEN SEES GAINS IN 1931 BUSINESS

Chicago, Dec. 5.—At a meeting here Thursday in the Palmer House six hundred Chevrolet dealers from this territory were told by President W. S. Knudsen and Vice-president H. J. Klingler of the Chevrolet Motor Company that the company looks for a normal upturn in business during 1931 and has made plans accordingly to take care of the automobile demand expected to develop.

Reports of the favorable reception accorded the new Chevrolet models were considered especially cheering. Mr. Knudson declared he did not agree with the view often expressed in the past that the motor car industry would lead the business upturn, but felt the demand for cars would keep pace with general business betterment.

The tentative production schedule for Chevrolet was given out as one million cars in 1931. To take care of immediate needs, President Knudsen stated that the factory is steadily adding employees to its pay roll, with the number now at 28,500 men.

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Added Federal Road Aid Plan Indorsed by N.A.C.C.

New York, Dec. 5.—Federal assistance in the form of temporary loans to states which need funds to meet Federal aid appropriations and additional appropriations by Federal government for the construction of secondary or "farm" roads, and grade crossing elimination projects, are proposed by the board of directors of the National Automobile Chamber of Commerce, as a means of unemployment relief.

Resolutions adopted by the board also suggested that the present limitation of Federal Aid participation to $15,000 per mile be removed temporarily in order that the secretary of agriculture might be permitted to appropriate up to 50 per cent. of highway construction costs.

It is pointed out that at the request of the government, states and counties generally have expedited their work over the past year to the point where many of them are now temporarily without sufficient funds to carry on a full program. For this reason the temporary loans to states are advocated.

However, the suggestion that such temporary loans to the states for road building purposes should not divert the special motor vehicle tax funds of respective states from road construction and maintenance, is emphasized.

PACIFIC GOODRICH CO. INCREASES PRODUCTION

Los Angeles, Dec. 5.—Production of the Pacific Goodrich Rubber Company plant has been increased from 20 to 25 per cent. and a similar boost will probably be made by January 1, according to J. C. Herbert, secretary of the company. The present output is approximately 3,000 tires and 4,000 tubes daily.

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Many New Accessories Will Be Seen at Shows

NEW YORK, Dec. 5.—**One of the features of the National Automobile Shows in January will be the unusual number of new accessories displayed on the 1931 models of passenger cars. This is the word brought back to New York by representatives of the management of the shows who have been making trips to automobile and accessory plants.**

In addition to new accessories, there will be numerous refinements. An example is the adoption by a number of manufacturers of radiator grilles, designed not only to improve the appearance of cars but to serve a useful purpose by affording a real protection to expensive radiators.

Another entirely new accessory with a strictly utilitarian value is what is known as a "fender guide." This is a slender rod, chrominum plated and topped either with a small chromium ball or brilliant red and green lenses, for attachment to the crest of the front fenders, as an indication to the driver that his fenders are clear of other vehicles in congested traffic.

Twin electric signals are rapidly taking the place of the single horns that have served in the past. Any number of makers have brought out matched horns and here again utility is the prime consideration because the matched tone is less offensive, but ever so much more effective, particularly in traffic. Compressed air operated signals, such as have become familiar on big buses, now are available for use on private cars as well. One maker has brought out a vacuum-operated signal of the type which is just as blatant as its

(Continued on Page 2)

Black May Lose Place As Leading Car Color

DETROIT, Dec. 5.—Although black continues at the head of the list of popular automobile colors for the fourth consecutive month, its supremacy is threatened, according to Howard Ketcham of the Duco Color Advisory Service in his December report, just made public. At the present time, he says, there are indications of a turning movement in the black trend preparatory to a decline.

Taking up the recent Chicago salon, the report says the Drake Hotel exhibition disclosed blue's relegation to fourth place among the hues displayed, but this, it is felt, is of small significance in view of blue's established year-round saleability. Lombard, a new blue leader, darker than Andalusite blue and distinguished by a subtle gray undertone, has far outdistanced all other blues. Washington blue medium, a considerably lighter and grayer value than Lombard blue, has gone into second place. Boatswain, Embassy, Belgium, Wendy and Valli-Blu were among the effective effulgent blues appearing on open and convertible-type cars at the Chicago salon.

"Green has surpassed brown in importance and is closely contesting blue for second place," the report continues. "This is the second month in succession that the largest individual color gain has been recorded by green. Not since January has interest in this hue been so active.

"At the Chicago salon there were more cars finished in green than any other hue, indicating that the leading arbiters of automobile style—the custom coach builders—have confidence that the motor buying public is agreeable to the return of green to style prominence. The majority of greens displayed at the salon were of the dark, bright variety such as Brewster, Ardsley, Hamilton and jade. Batik, winter moss and Verdancia were among the interesting pastel values prominently displayed upon open as well as closed car styles.

"Brown has had a sharp decline since last month. Interest in soft rich values similar to cream beige light, cracker buff, Yedaz tan and stone brown appear to be sustained, but the medium reddish hues of brown, such as Chippendale, Stanford, and autumn drab seem to be losing ground.

"Marroon is rapidly regaining favor with interest centering in deep rich values, such as crown, baronial and Ascot.

"Gray continues the sharp decline entered last month. Although deep neutral grays have returned to favor at the present time there is a persistent minority interest manifested in greenish hues of gray.

"The appearance of so many colors of low saturation on automobiles at the Chicago salon may indicate the approach of a new color cycle which would impair the monopoly so long enjoyed by dark, subdued shades."

SENATE SIDETRACKS PARKER BUS BILL

(Continued from Page 1)

tion to the clause requiring bus lines to obtain a certificate of "public convenience and necessity" from the Interstate Commerce Commission before they could operate. It was said this would give a virtual monopoly to those interstate bus lines already in operation.

Efforts may be made to adjust these differences when the bill gets back into the Senate Interstate Commerce Committee, unless all factions agree, however, to pass it at the short session.

Senators Brookhart of Iowa and Dill of Washington led the onslaught on the measure in the desultory debate that preceded its recommittal to committee.

"The railroads want to go into the bus business," Brookhart said, "not to develop this great new system of transportation that has come into our country, but to throttle it. They have enough to attend to if they attend to their railway transportation.

"Bus transportation may reduce the railroads' passenger service somewhat on the short runs, but not on the long runs. I am opposed to giving the railroads any right to go into the bus business at all, except possibly for feeder lines that will not be in competition with any bus line or paralleling their own rail lines."

Senator Dill declared the time is not ripe to enact a system of regulation of a new business that is just developing, adding that the government regulated railroads for forty years before they were required to have cetificates of necessity and convenience.

He complained that the bill does not give the I. C. C. the power to fix rates, but only grants the authority to issue certificates of convenience.

"If we would strike from the bill," Senator Dill said, "the requirement of a certificate of necessity we would provide for all of the regulation that is necessary. The real complaint against unregulated interstate bus operation is based on the fact that there is a lack of responsibility on the part of the operators."

Senator Smith of South Carolina joined others in the attack on the bill, pointing out that the transportation act of 1920 destroyed water competition "and now we are asked to destroy our bus and water competition."

FIRESTONE REPORTS DEFICIT FOR YEAR

New York, Dec. 5.—The Firestone Tire and Rubber Company in the fiscal year ended October 31 had a net loss after dividends on preferred and common stocks of $4,570,188. The company showed a net profit after charges of $1,541,034, and declared dividends of $6,111,222.

Net operating profit after cost of sales, but before charges, was $7,651,-133. Surplus for the year was reduced by $7,759,340, after addition of the net profit and certain surplus items, and the deduction of dividends and financial operations of the company. These operations included the charging of surplus of cancellation of employees, stock contracts and the reduction of treasury stock at par value.

The balance sheet of the company shows total assets of $147,319,225, of which current assets were $56,445,-390. Cash was on October 31, $12,-275,352. Inventories, included in current assets, were $27,548,987. Current liabilities were $4,214,766.

Harvey S. Firestone, president of the company, said, in presenting the report to stockholders: "The great problem today of every manufacturer is to merchandise and distribute his products more economically. We have made great progress the past year in this respect by readjusting our merchandising and distributing system, and by material reductions in all of our expenses.

OTHER FINANCIAL NEWS

BLACK & DECKER

Black & Decker Manufacturing Company and subsidiaries for the year ended September 30, 1930, report net profit of $211,640 after Federal taxes and dividends on preferred stocks of subsidiaries, equivalent after dividend requirements on 8 per cent. preferred stock to 44 cents a share on 298,354 no-par shares of common stock. Net sales amounted to $6,541,139. Above net profit is exclusive of $92,130 expense of moving the Van Dorn Electric Tool Company and Domestic Electric Company plants, which was charged against surplus account.

Consolidated balance sheet as of September 30 last shows total assets of $10,582,544. Current assets were $4,939,839 and current liabilities $2,005,308.

ALLIS-CHALMERS

Unfilled orders of Allis-Chalmers Manufacturing Company on November 30 showed a slight gain over a year ago, the total being $14,258,-000, against $13,533,000 for November 30, 1929. On January 1 last unfilled orders amounted to $12,872,000, a gain on November 30 being about $1,500,000. There was a decline of about $1,000,000 compared with October 31, when unfilled business totaled $15,298,000.

NEW ACCESSORIES FEATURE 1931 CARS

(Continued from Page 1)

air-operated brothers, but considerably less complicated.

Thanks to the adoption of new headlight legislation by nearly all states, headlamp bulbs may be larger. Heretofore twenty-one candlepower has been the limit, but the new lamps are of thirty-two candlepower, though readily interchangeable with the present types—and they give about four times as much road illumination.

Changing body styles which have accounted for spare tires moving off the backs of bodies into wells in the fenders have been responsible for the appearance of a number of new types of trunks in leather, imitation leather and metal. Some of them are cleverly designed so that they may be opened out in a way to triple their normal capacity when added carrying space is needed, on camping trips, for example.

Rear view mirrors are now fitted with clocks of either the one or eight day variety. A new type of dome light for sedans not now equipped has been developed.

Fender flaps are fairly common and are recognized for the good work they do in preventing mud and water being splashed all over a car. The new ones are made of flexible rubber molded into a design that harmonizes with the shape of the fenders, and their method of attachment has been perfected to the point where they will stay put, once they are applied.

KNUDSEN SEES GAINS IN 1931 BUSINESS

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as compared with a low of 26,000 and a high of 36,000.

"The automobile industry will follow the advance of prosperity; it will not lead the advance," said Mr. Knudson.

"Construction will come first, bringing a rise in steel making. This will help the railroad business pick-up and when that business advances the automobile industry will come along.

"It is up to every merchant to put his best foot forward and to stock goods that will tempt the public to buy and end the stagnation. The slow-up in 1930 was greatly over-estimated. Perhaps we felt it less because our cars are priced low, but it was not anything to cry about."

Discussing the outlook, Vice-President Klinger said: "Chevrolet expects 1931 to be a normal business year, but as evidence that we are adopting aggressive policies to see that it ranks with past business years, I point out that annual new models are being announced two months in advance of the customary period."

CHEVROLET'S OUTPUT SETS HIGH RECORD

(Continued from Page 1)

has been aroused here by Edsel Ford's statement regretting that he will be unable to serve on the New York Board of Trade's committee to study indiscriminate price cutting. Mr. Ford said:—

"I feel that the necessities which the individual man on the street has to buy have not come down in price in nearly the same proportion as the basic materials and larger manufactured products have and an adjustment of this kind seems to me should be encouraged, although it should be carried out in a sane manner." Mr. Ford expressed the belief that retail prices as a whole must readjust themselves before there would be any great change in the business situation.

SPARKS *from* DETROIT

Which Gets the Credit?

* * *

Advertising Power Dates From Automobile Advent

* * *

Motorizing of Circus

Chris Sinsabaugh—Detroit Editor

DID the automobile make advertising or advertising make the automobile? This moot question is handled by Henry T. Ewald, president of the Campbell-Ewald Company, in the article he has contributed for the twenty-fifth annual number of the Adcrafter, official publication of the Detroit Adcraft Club, which celebrated its silver jubilee with a banquet last night.

It seems to me this is best answered by the story they tell on Henry Ford and Barney Oldfield. It is an old one, I know, but it is applicable here. No need to remind the reader that Ford built the famous "999" racing car in which Oldfield established his early reputation as a race driver. That old car was the Ford-Oldfield meal ticket at the time, and there is no gainsaying the fact that each is in the other's debt for the boosting of this combination up the ladder of fame.

Ford met Oldfield one day about ten years back, and, in reminiscing about the old days, Ford remarked: "Well, Barney, you helped make me and I helped make you."

"That's right, Henry," retorted Barney. "But I did a much better job than you did."

* * *

THIS preamble leads up to the Ewald article, part of which reads: "What result has all this upon the automobile industry—born here and still the very heart and core of Detroit. Frank Presbrey, in his excellent book, 'The History and Development of Advertising,' makes the rather interesting remark that advertising men of a half century hence, in looking back over the history of advertising, will undoubtedly regard as unimportant all progress made up to the time advertising and the automobile joined forces.

"I wonder how many people in Detroit realize the significance of this? It may still be debatable whether the automobile made advertising or advertising made the automobile. At any rate, the automobile provided the big opportunity which led to a definite, concrete conclusion that advertising was a force of the first magnitude; a force comparable to steam and electricity; a force equal to the very thing it brought into being—the automobile itself.

"For, look what happened: Advertising during this last quarter century was one of the biggest single factors in taking us out of the horse and buggy and planting us in the motor car, and by that very move revolutionizing our habits of living. No industry of this magnitude had ever previously been put across in such a short period of time.

"But for advertising itself this revolutionary change did more. This success put at rest any doubt as to the value of advertising; it proved its power as a merchandising force, so that today it is taken for granted. It proved that successful advertising could persuade the average American to acquire a costly article when the pleasure of such a commodity is convincingly pictured to him. It opened the way for a class of advertising that made quantity production possible.

"For, when you can persuade the public, by advertising, to purchase in quantity a motor car, an article probably next only to the home in cost, certainly the door is open to sell so-called luxuries of lesser cost also in quantity. There has followed a long line of desirable necessities that were undreamed of by our nineteenth century forefathers.

"The point back of all the experimenting of advertising with the motor car was that it gave confidence to our business world that mass production was possible through advertising."

* * *

ONLY the other day Automotive Daily News commented editorially on amusement transportation, pointing out the possibilities of motorization in this business. In other editorials it has told of neglected opportunities to utilize advertising space on motor trucks. Bearing the latter in mind, I am passing along gossip that comes across the sea about a specially constructed Chevrolet truck which has had built into it a mammoth loud speaker so powerful that the sound of the particularly loud horn penetrates three miles against the wind and four and a half miles with it. This Chevvie is owned by a traveling circus which utilizes the horn to herald the coming of the circus to various towns en route.

Quick Service Repair Shop Employs Unusual Methods

Twenty - two Expert Mechanics and Special Tools Help Company Live Up To Its Trade Name

"ALL car jobs must be completed and on the street no later than Saturday night of the week following that in which they were received at the shop." This is the hard-and-fast rule of the Quick Service Repair Company, 3808-20 Kensington Ave., Philadelphia, which helps it live up to its name.

For example, recently a Studebaker coupe was brought in at 8 p. m. on a Friday night, needing chrome plating; slip covers, lacquering and glass installation. Six men were assigned to the job, as follows: Two on plating work, one on making the slip covers, who also installed the glass, and three on the lacquering. Saturday of the next week it was delivered to the customer. The shop is so adequately manned—there are twenty-two men in the plant in addition to the proprietor and the bookkeeper—that this unusual policy is not only possible, but is worked out successfully.

* * *

"WE PUT enough expert workmen on a late job to get it out, regardless," asserts Aaron Goldberg, the proprietor, "and the work has to be satisfactory in every particular. There is a working foreman in each department, a general superintendent, who is responsible for all shop work, and, aside from my outside work, I make inspections of the jobs from three to four times a day.

"We have no piecework here. All the men are on a straight salary, as I have found this brings the best results. We put the 'complete-by-Saturday' rule into operation for several reasons, among them the fact that many customers wish to have their cars ready for Sunday driving."

* * *

THE Quick Service Repair Company occupies a one-story building, containing 55,000 square feet of floor space, and has the longest frontage of any automobile repair shop in the city. The shop draws business from every section of the city and from points more than a hundred miles distant.

"As an example of this," said Goldberg, "three years ago I did a refinishing job, a complete relacquering, on a customer's Flint sedan. Recently, because he was so pleased with the work and price, he brought me in his Studebaker, driving it 135 miles from Dover, Del., and ordered a burn-off and repaint, new floor carpet, new top and slip covers, straightened fenders, welded parts and chrome replate job.

"And here's a point in my policy: I never try to run up a big bill on a customer's car. If it requires only one of my 'beauty treatments,' such as washing, Simonizing, vacuum-cleaning the upholstery, touching up rust spots, redressing the top, cleaning the woodwork and repainting underneath the fenders, repainting the chassis, and perhaps touching up the striping, I do not refinish the whole car, but charge him only for the 'beauty treatment' at a price, which is but a fraction of the repaint job.

"I have surprised some of my customers in this way, and they agreed that this treatment was all the car really needed. We give a lot of these 'beauty treatments,' which range in price from $22.50 to $35, according to make and size of car."

* * *

WHILE rehabilitating wrecks comprises the larger part of the business, the company does an extremely active trade along other lines, including rebuilding work on cars of foreign manufacturer, custom work of various kinds for car dealers, but on new cars only, and work in different departments for private customers, as well as considerable work for insurance companies, which are usually very good patrons.

A very big item, not always taken into consideration by all repair shops, is repairing window regulators on closed cars. A surprising number of cars need this repair work. One man is put on the job and, on an average, it takes only twenty minutes to repair a single regulator. Removing stains from upholstery is also profitable, among the lesser jobs. This year the company has an arrangement, as do many other shops, of repairing cars for private owners on time payments.

* * *

THE metal shop is equipped with machines not found in the average automobile repair shop. For instance, the company presses out its own moldings from sheet body steel, therby positively eliminating, in lacquering moldings, the well-known objection of having the lacquer crack and chip at this point, as is so frequently the case with lacquered separate moldings. The equipment includes a set of Pexto machine tools in the automobile sheet metal working line, including beading machine, square shear machine and a triphammer with power brake. Here any metal part can be made from body steel.

The wood - working shop is equipped with a Crescent bandsaw and crosscut saw and a Hutchinson ripsaw and joiner, and in the glass division is a Homa glass edger. There is a complete outfit for chrome-plating. Nickel-plating, says Goldberg, is in small demand, and he avoids it. The machines mentioned, of course, constitute, but a small part of the equipment.

* * *

VIRTUALLY any kind of automobile repair work is accepted and accomplished quickly, and the departments of metal, wood, upholstery, paint and glass work are inclusive of more subdivisions than ordinarily are found in repair shops. Except in emergencies there are four men in the metal division, three in the wood, two in the upholstery, eleven in the Duco and varnish paint division and one in the glass division.

The usual routing is in the order mentioned, the trimming and glass installation being conducted in the same department. The chief general operations cover frame, axel and fender straightening, blacksmithing, body repairing, radiator repairing, wheel work, top making and repairing, cushion recovering, slip covers, tire covers, lacquering and painting and glass installation.

As for quick work, it is nothing for the shop to take a complete set of fenders, have them straightened or otherwise repaired and refinished, and back again, installed, inside of eight hours.

After five and a half years in business, the company has had to replace for a customer only one top, due to defective material, not poor workmanship. In conducting a quick service, Goldberg explains, it is very necessary to employ only experts in each division. The quickest repair job ever turned out here was straightening and refinishing a single fender in 1 hour and 20 minutes.

* * *

AN extensive business is done in manufacturing slip covers for cars of various makes and sizes, and a very large stock of textile materials is carried, so that matching may quickly be done. Both new and used automobile parts required in the usual repair jobs are kept in stock, according to the requirements of customers, most of whom, however, wish new parts used in the work.

* * *

GOLDBERG keeps two cars for call and delivery work, one a Packard sedan and the other a Ford roadster. He has a regular system of car operation for calls and deliveries. For example, when he starts out to a customer's place to get a car requiring repairs, he drives out in one of his own cars, leaves it at the customer's and drives away in the customer's car, if possible, provided the job is not to be a long one. When the customer's car is finished, he drives it back, leaves it and starts away in his own car that had been left with the customer.

In a repair shop of this kind, large quantities of rags are used in the work, and Goldberg watches casts closely, even in such a particular. He buys rags in fifty-pound rolls, paying at the rate of 40 cents a pound for them. But he never throws any rags away while they hold together, having them laundered at 4 cents a pound, thereby saving 36 cents on each pound. He saves time and trouble by not going out to buy colors for the different jobs. Instead, he tins his own duco colors and shades, thus having them quickly on hand when he needs any of them.

* * *

THE company uses only one form, a triplicate work sheet, one copy going to the customer, another to the office and the third to the shop, where it is placed in a leatherette case with celluloid front and hung on the car in work. This form gives the name and address of the customer, the make and license number of his car, the date when it is promised for delivery, the instructions for the work and the amount of charge for each item and the total. Each form bears a serial job number and the signature of the person authorizing the work.

The proprietor does most of the outside estimating and keeps in close personal contact with his customers, seeing each of them at least twice a week. If they are not back again in his shop, or have not communicated with him in about the time he has indicated on his index cards that their cars might require attention, he may call them on the telephone if he cannot make a personal call at the time.

The company slogan is: "Use Our Service—It Pays," and Goldberg feels that it is up to him to prove this to the customer or prospect.

And as for "business hesitancy," there has been no hesitation in his shop all through this so-called depressed period.

DRIVERS' LICENSE BILL OPPOSED IN SPRINGFIELD

Springfield, Ill., Dec. 5. — The Springfield Auto Dealers' Association went on record as opposing the proposed drivers' license bill on the grounds that it is an additional burden to the motor car owners, in that it cannot accomplish good.

The proposed bill is, in the opinion of the dealers, a great inconvenience to automobile owners who believe that the present laws, if enforced, are sufficient to cover the situation without additional measures.

The twelfth annual state meeting, election and convention will be held in Peoria December 8 and 9, and will be attended by practically every dealer here.

RANKING OF STATES IN SALES CHANGES

(Continued from Page 1)

England and the East finished lower this year than last. In fact, five of the six New England states improved their ranking, while the other remained the same. Three of the Eastern states went up on the list, while the other three remained at the same position. All three states on the Pacific Coast improved their ranking, while of the eight Rocky Mountain states not a one was able to rise on the sales ladder, four dropping and four holding their own.

Five Southern states went up, five down, while three remained at their same positions. In the Great Lakes sector one state advanced, three lost ground and two stood still. In the agricultural belt of the Middle West one state gained in ranking, two lost and three were stationary.

Fourteen states in the whole country have a lower ranking this year in the sales ranking than last. They are: Ohio, Michigan, Indiana, Nebraska, North Carolina, Louisiana, Alabama, Arkansas, South Carolina, North Dakota, Montana, Arizona, New Mexico and Wyoming.

Sixteen states maintained this year the same rank held in 1929. They are New York, Pennsylvania, Texas, Massachusetts, New Jersey, Wisconsin, Minnesota, Oklahoma, Kansas, Kentucky, Colorado, Mississippi, South Dakota, Utah, Idaho and Nevada.

Following is the ranking of states in new passenger car sales in the first ten months of this year, as compared with the corresponding period of last year:

1930 Rank	State	1929 Rank
1	New York	1
2	Pennsylvania	2
3	California	5
4	Illinois	6
5	Ohio	3
6	Michigan	4
7	Texas	7
8	Massachusetts	8
9	New Jersey	9
10	Missouri	11
11	Iowa	13
12	Wisconsin	12
13	Indiana	10
14	Minnesota	14
15	Oklahoma	15
16	Kansas	16
17	Virginia	19
18	Connecticut	20
19	Nebraska	17
20	Tennessee	21
21	Washington	22
22	Maryland	24
23	Kentucky	23
24	North Carolina	18
25	Florida	30
26	Georgia	27
27	West Virginia	29
28	Colorado	28
29	Louisiana	26
30	Alabama	25
31	Oregon	33
32	Mississippi	32
33	Arkansas	31
34	South Dakota	34
35	Maine	37
36	South Carolina	35
37	Rhode Island	39
38	North Dakota	36
39	Montana	38
40	New Hampshire	43
41	Utah	41
42	Idaho	42
43	Vermont	44
44	Arizona	40
45	Delaware	47
46	New Mexico	45
47	Wyoming	46
48	Nevada	48

Following are the new car registrations in the leading states in point of sales for the first ten months of this year, as compared with the corresponding period of last year:

	1930	1929	Per cent Decline
New York	250,483	313,115	20
Pennsylvania	184,051	243,935	24
California	165,740	228,851	27
Illinois	155,982	223,949	30
Ohio	143,835	242,091	40
Michigan	128,330	238,909	46
Texas	108,882	184,901	41
Massachusetts	98,080	125,833	22
New Jersey	93,462	115,597	19
Missouri	80,769	105,628	23
Iowa	69,680	96,768	25
Wisconsin	68,409	97,744	29
Indiana	66,776	113,273	41
Minnesota	63,354	84,084	24
Oklahoma	49,768	82,307	39
Kansas	41,768	69,016	39
Virginia	40,697	52,030	21
Connecticut	38,340	51,659	25
Nebraska	38,276	59,809	36
Tennessee	34,922	51,248	31

District of Columbia had the smalest decline in sales from last year, with a drop of 13 per cent., while Delaware was next, with 16 per cent., and Florida next, with 17 per cent. New Jersey and New Hampshire tied with a falling off of 19 per cent.

The largest declines, ranging from 40 to 49 per cent., were those of the following states: Arizona, Wyoming, South Carolina, North Dakota, Montana, Arkansas, Alabama, Ohio, Michigan, Texas, Indiana and North Carolina.

SALES VOLUME IN 1931 TO BE INFLUENCED BY REPLACEMENT DEMAND

Montreal Dec. 5.—Demand for automobile replacements has been backing up for some months, but must shortly be felt in the market, according to the view of W. C. Herring, assistant general manager in charge of sales, General Motors of Canada, Ltd., who has just returned from a coast-to-coast survey of the Canadian automotive field. This pyramiding of the replacement demand, Mr. Herring thinks, may have a decidedly beneficial influence on the sales volume in 1931.

"The fact of the matter is," said Mr. Herring, "we have been consuming more cars than we have been producing. I do not mean that people have been buying more new cars than were being produced, but that cars have been used up at a greater rate than they were being manufactured. Old cars are getting older and less serviceable without being replaced. The ultimate effect of this program is easy to predict. It means an enlargement of new car sales volume very soon.

"Cars are not lying idle. I found on my trip through Canada that the money being spent on parts and on customer labor is at least normal. It simply proves that people are running their cars and wearing them out. Gasoline consumption figures and tire sales volume tell the same story. Motor car consumers have been pyramiding a nice demand for new cars, which may, and I believe most certainly will, have an excellent effect on sales volume in 1931."

Mr. Herring concluded with the observation that dealers throughout Canada were anything but pessimistic about prospects for 1931.

MOTOR CLUB OF N. J. PAYS SEMI-ANNUAL DIVIDEND

Newark, N. J., Dec. 5.—Motor Club of New Jersey, at a meeting of the board of directors, announced that semi-annual dividends of 45 cents a share on its no par value common stock was declared, payable on December 15, to stockholders of record on November 30.

Cumulative New Commercial Car Registration Statistics, November, 1930

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	F. W. D.	Fargo	Federal	Ford	G. M. C.	International	Mack	Paige	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Illinois	4		240	34	61				13	385	5	44	7		2	4		3	2				2	4		23	833	Illinois
Ill., 1929	3	2	173	20	59	1		10	5	620	31	68	6	*		30				3		16	12	*		95	1154	Ill., 1929

*Not in production at that time.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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Unemployment Cures

IF there is one subject more than another at present assuming first importance in the minds of the American people it is that of unemployment. Bitter as our present situation is it has served at any rate one useful purpose by calling to the attention of the American public this basic cause of far-reaching unhappiness and misery.

In a recent address, delivered by Dr. Royal Meeker of Yale University before the American Society of Mechanical Engineers, this economist reviewed significantly the causes, palliatives and cures of unemployment. As the principal causes of unemployment Dr. Meeker lists the following:

"1.—Lack of planning of production to meet consumption needs.

"2.—Changes in the general price level, which means changes in the purchasing power of money.

"3.—Unforeseen calamities, including marked overproduction of wheat, cotton, petroleum and other commodities, as well as destruction of lives and property by earthquakes, floods, storms, famines, etc.

"4.—Technological improvements due to new machines, methods, management and organization."

Dr. Meeker then lists the palliatives from the soup kitchen and bread line to odd job charity and the various plans for regulating employment adopted by progressive industrial organizations and even cities. He points out that even the best of these palliatives, the plans of individual corporations for protecting their employees against unemployment, or even methods adopted by industries or cities to the same end, do not solve the problem as a whole. Even widespread campaigns for promoting public works, with their contribution to employment, can have only a limited applicability. He points out that money taken by taxation or loans from the public purse leaves just so much less to be invested in private enterprise.

Dr. Meeker then lists three major policies, which must guide any really comprehensive plan for curing the unemployment evil, as follows:

"(1) Planning production to meet the estimated requirements of consumption; (2) stabilizing the general price level, that is, the buying power of money, and (3) providing carefully planned, all inclusive unemployment insurance to prevent unemployment, as well as to care for the unemployed."

Continuing, Dr. Meeker acknowledges the difficulty of carrying through these reforms, but holds that "the importance of unemployment demands bold and drastic action."

"It is very difficult to make a start on any of these proposed measures and even more difficult to carry through to a successful finish, but the importance of unemployment demands bold and drastic action. Nothing worth doing is easy.

"A beginning, however small, has been made in the planning of production for consumption. These small beginnings should be supported and expanded as rapidly as possible to include the whole nation, and, eventually, the nations trading with us.

"The reasonable stabilization of the price level is indispensable to the reasonable stabilization of business. Again there must be clear understanding and complete co-operation between private financial organizations and the public agencies. A good beginning has been made by the Federal Reserve System. The completion of the task will be difficult, but it can and must be done, if socialistic and communistic experiments are to be avoided.

"Lastly, there is, as both remedy and preventive, unemployment insurance. Unemployment is really an industrial accident or disease. In fact, it is the only truly industrial disability. One can fall ill or fall and break a leg at home as easily as at work, but the only way to become unemployed is to get a job and then lose it. Unemployment is just as insurable as illness or traumatic disability.

"Unemployment insurance is not merely remedial for the purpose of providing support for victims of industrial depressions. Its most important effect is prevention. Unemployment insurance will unquestionably act like workmen's accident compensation insurance to prevent the disability insured against.

"When employers and the rest of the public realize fully that unemployment is what President Hoover has described it to be, the greatest waste in industry, and that every partly or wholly unemployed person must be supported out of the national income produced by those employed in industry, they will take the necessary preventive measures.

This whole subject of unemployment is a problem that will occupy a large share of our attention during the coming years. Every manufacturer, wholesaler and retail merchant in the automotive industry, all employers of labor, should give it his earnest consideration and study. It has happened that our industry has led the way in similar situations before and it well may do so in this most vital of problems.

PORTLAND A. T. A. ELECTS OFFICERS; DRAKE PRESIDENT

Portland, Ore., Dec. 5.—Harley W. Drake, superintendent of transportation for the Portland Gas and Coke Company, was elected president of the Portland Automotive Trades Association at its annual meeting. He succeeds Ernest J. Blaser of the Factory Motor Car Company and is the seventh president of the Portland organization, formed in 1914.

Other officials elected were: Joseph Vana, Vana's Quality Auto Painting Company, first vice-president; K. P. Gustin, Gustin Service station, second vice-president; Henry Yost, Yost Brothers Garage, third vice-president; A. E. Foss, Portland Automotive Trades Association, secretary; C. A. Bankhead, Bankhead & Walter, Inc., treasurer; John M. Bates, Bates Motoramp Garage and Fred Dundee, Dundee Auto Repair and Machine Works, directors.

Department vice-presidents, garage and repair, Fred Olson, West Oregon garage; battery and electrical, Harry Sanders, Sanders Magneto Service; machine shop and regrinders, C. O. Wick, C. W. S. Grinding and Machine Works; paint shops, S. H. Shannon, Shannon's Enamel Bake Ovens; retail gas and oil division, A. Sandin, library garage; sheet metal, M. B. Fisch; tire shops, O. C. Potter, O. C. Potter Company; top and trim division, S. C. Swanson, Swanson Top Shop.

CHRISTMAS SAVINGS PLAN FOR GOODRICH EMPLOYEES

Akron, O., Dec. 5.—A Christmas savings plan for the coming year will be offered employees of the B. F. Goodrich Company and its subsidiaries, the Miller Rubber Products Company and the Philadelphia Rubber Works Company, according to a recent announcement made by T. B. Farrington, general manager of the factory service division.

The company will deduct from the pay of employees who subscribe to the voluntary savings program. The system will be operated through arrangements with several banks here, the minimum of 50 cents each pay period being handled, and the fund will receive the same interest as if paid at the bank. This system was operated successfully for several years at the Miller plant before its consolidation with Goodrich.

AUTOMOBILE CONVOY FOR FORD'S NEW N. J. PLANT

Edgewater, N. J., Dec. 5.—The Automobile Convoy Company has opened headquarters on the old Meyer property, River Road, here. The new company has made arrangements for the transporting of cars to various dealerships in the New York district of the Ford Motor Company from their new assembly plant in Edgewater.

COMING EVENTS

DECEMBER

6-17—**Brussels, Belgium.** Automobile Exhibition.

JANUARY

3-10—**New York.** National Automobile Show.
5—**New York.** Rubber Manufacturers' Association convention.
6—**New York.** National Automobile Chamber of Commerce annual show banquet at Hotel Commodore.
5—**New York City.** National Automobile Dealers' Association convention.
7-10—**East Orange, N. J.** Automobile Show of the Oranges and Maplewood.
8—**New York City.** Society of Automotive Engineers' annual dinner.
10-16—**St. Louis, Mo.** National Roadbuilders' show and convention.
10-17—**Buffalo, N. Y.** Automobile Show.
10-17—**Milwaukee, Wis.** Automobile Show.
10-17—**Philadelphia.** Automobile Trade Association annual show.
10-17—**Newark, N. J.** Automobile Show.
11-17—**Cincinnati, O.** Automobile Show.
13-17—**Evansville, Ind.** Automobile Show.
17-24—**Boston.** Automobile Show.
17-24—**Detroit, Mich.** Annual Show, Convention Hall.
17-24—**Hartford, Conn.** Automobile Show at state armory.
17-24—**Montreal, Can.** National Motor Show of Eastern Canada at Stadium.
17-24—**Baltimore, Md.** Automobile Show.
17-24—**Pittsburgh, Pa.** Automobile Show.
19-22—**Chicago.** National Wheel and Rim Association convention at Edgewater Beach Hotel.
19-23—**Detroit, Mich.** Society of Automotive Engineers' annual meeting.
19-24—**Louisville, Ky.** Automobile Show.
19-24—**Rochester, N. Y.** Automobile Show.
24-31—**Chicago, Ill.** National Automobile Show.
24-31—**Cleveland.** Automobile Show.
24-31—**Washington, D. C.** Automobile Show.
26-27—**Chicago.** National Automobile Dealers' Association convention.
26-31—**Springfield, Mass.** Automobile Show.
26-31—**Syracuse, N. Y.** Automobile Show at Armory.
26-31—**Portland, Maine.** Automobile Show at Exposition Building.
31-Feb. 7—**San Francisco.** Automobile Show.

FEBRUARY

Jan. 31—Feb. 7—**St. Paul, Minn.** Northwest Automobile Show, jointly sponsored by St. Paul and Minneapolis at the Minnesota State Fair Grounds.
2- 7—**Scranton, Pa.** Automobile Show.
2- 7—**St. Louis.** Automobile Show.
3—**Minneapolis.** Auto Trade Association convention.
7-14—**Los Angeles.** Automobile Salon.
7-14—**Kansas City.** Automobile Show.
9-14—**St. Petersburg, Fla.** Automobile Show at Winter Garden.
9-14—**Denver, Colo.** Automobile Show.
11-13—**Chicago, Ill.** American Society of Mechanical Engineers' fuel meeting.
14-19—**Indianapolis.** Automobile Show at State Fairground.
14-21—**Providence, R. I.** Automobile Show.
14-21—**Omaha, Neb.** Automobile Show.
16-20—**San Francisco.** Society for Steel Treating National Western Metal and Machinery Exposition.
21-28—**San Francisco.** Automobile Salon.
21-28—**Quebec, Canada.** Automobile Show.
23-28—**Des Moines, Ia.** Automobile Show at Coliseum.
24-March 1—**Seattle, Wash.** Automobile Show at Civic Auditorium.
25-March 2.—**Camden, N. J.** Automobile Show.

MARCH

6-15—**Geneva, Switzerland.** Eighth Swiss International Automobile Show.
7-14—**Brooklyn, N. Y.** Automobile Show.

MAY

4- 9—**Charlotte, N. C.** Good Roads Convention.
9-Aug. 9—**Berlin, Germany.** International Garage Exposition.

Contemporary Comment

WE are making new paths in this business. "Old gods have fallen." There have been changes and readjustments in this industry due to general economic conditions. And we expect more. But these inevitable things are operating in favor of the manufacturer, distributor, dealer or salesman who understands them and utilizes them to his advantage.

Due to necessity, ways are being found to reduce operating expenses; to eliminate waste; to cut overhead; to get rid of dead timber; to build even better merchandise of greater value for less cost.

My greatest steps forward have been through grief or pain, and right now I can look back over my last year and see what I have learned.

We have stored up great treasures in the warehouses of our minds that will come to light when this economic depression shall pass away.

Great progress will be made in industry, in inventions, in art, because logy minds have been stimulated by adversity. Men must earn their money by the sweat of their brow, and only a day's work will earn a day's pay.

The world needs the personal transportation possible only with the motor vehicle. Modern people cannot live without motor cars. Of necessity this demand will increase in the future.

For the manufacturer, distributor, dealer, salesman, who has profited by this experience there is a greater opportunity than ever before. The evils of the business have been brought out into the sunlight—the little potatoes have been shaken to the bottom!—**R. H. Faulkner in the Accelerator, published by the Auburn Automobile Company.**

* * *

THE most hopeful event is the arrival of seasonal temperatures all over the country, which naturally spurs retail trade everywhere into greater activity in seasonal goods. At the same time it is still true that wholesale and jobbing business has made no great progress, if it has not remained for the most part stationary. There are better sales in the Northwest of heavy outdoor clothing, knit goods, shoes and rubbers. And such conditions have to some extent spread southward, though they are most noticeable in the far North. Christmas buying is said to have started unusually early this year. Christmas savings funds will be distributed next week and in holiday lines jobbing business, and to some extent wholesale trade, has improved more or less.—**Commercial and Financial Chronicle.**

* * *

TOTAL investment of Class I railways in motor vehicles amounted to $40,000,000 as of June 30, 1930. Excluding school and sightseeing buses, railroads operated 6 per cent. of all commercial buses. Gross revenues for the first six months of 1930 were equal to 40.5 per cent. on total investment in buses and trucks. Leading roads with most productive motor vehicle investments are Boston & Maine, Denver & Rio Grande Western, Union Pacific, Pennsylvania, New Haven, Colorado & Southern and Richmond, Fredericksburg & Potomac.—**Standard Service on Railroads.**

* * *

RUBBER tire manufacturers are in a position to resume full-time operations the first week in January, members of the Rubber Exchange of New York are advised. A shortage of stocks in some sizes of tires is reported. The B. F. Goodrich Company is said to have increased its working force in the past week on receipt of a large order from a national tire distributing system. United States Tire Company is now producing about 25,000 tires daily, compared with 15,000 during the summer months. Goodyear Tire, at present operating on a reduced schedule, will resume operations at full capacity after the first of the year in order to meet spring delivery demand.—**New York Times.**

* * *

OCTOBER production of automobiles in this country and Canada was only 154,585 vehicles, according to the Department of Commerce. The figures are slightly lower than the estimate of the Automobile Chamber of Commerce published a week or so ago. If this rate is maintained for November and December, the year's output will be approximately 3,500,000 vehicles, or nearly 2,000,000 less than last year. Some conservative automobile leaders hope for an increase of 750,000 cars next year.—**New York Evening Post.**

WEEKLY BUSINESS INDICATORS

REPRODUCED BY ARRANGEMENT WITH THE SURVEY OF CURRENT BUSINESS

U. S. DEPARTMENT OF COMMERCE

DATA PLOTTED, WHERE AVAILABLE FOR WEEK ENDING NOVEMBER 29, 1930

WEEKLY AVERAGE, 1923-1925, INCLUSIVE =100

~LEGEND~
..... 1929
——— 1930

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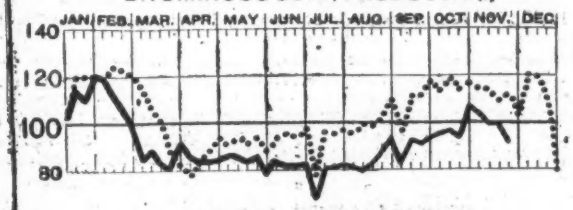
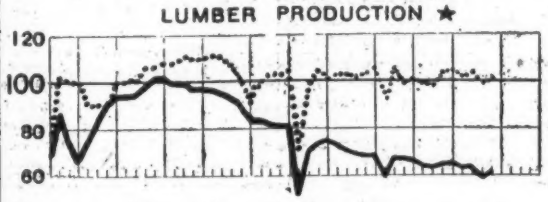


LUMBER PRODUCTION ★



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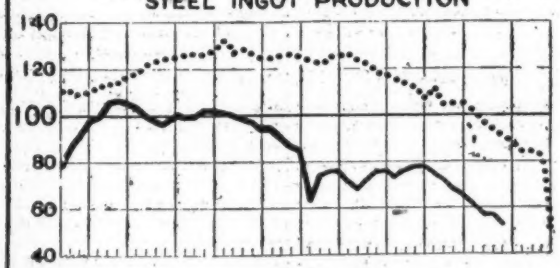
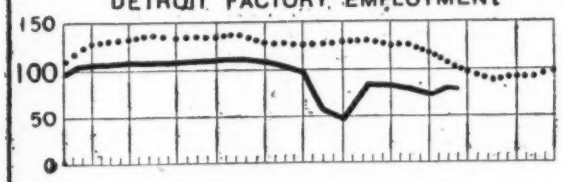
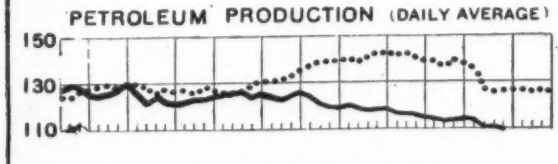


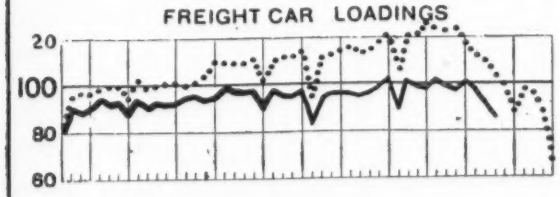
DETROIT FACTORY EMPLOYMENT



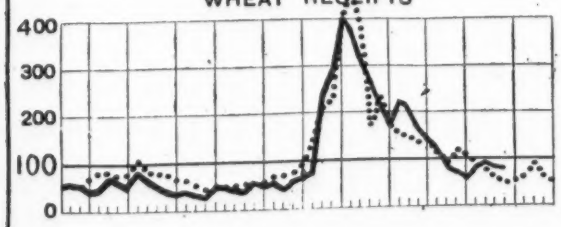
PETROLEUM PRODUCTION (DAILY AVERAGE)



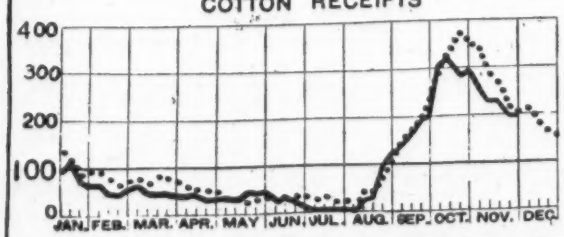
FREIGHT CAR LOADINGS



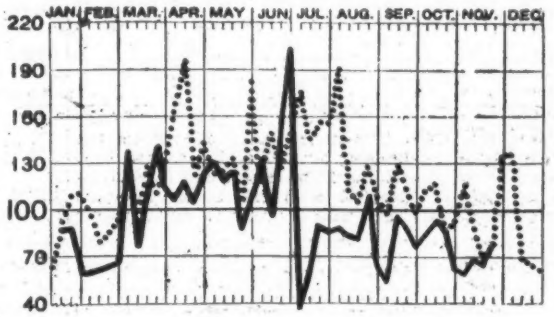
WHEAT RECEIPTS



COTTON RECEIPTS



BUILDING CONTRACTS (DAILY AVERAGE)



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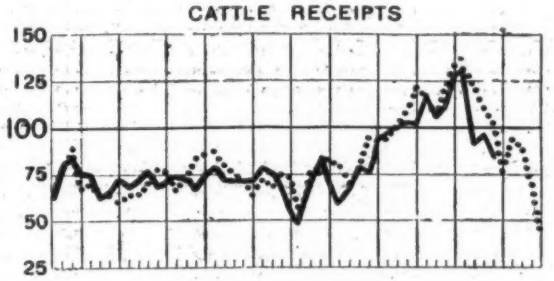
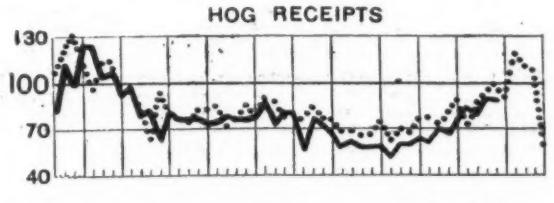
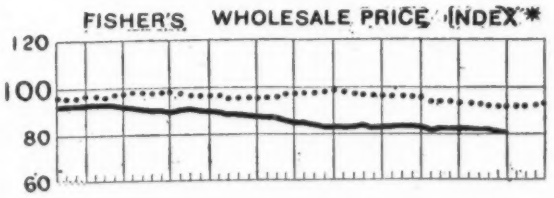


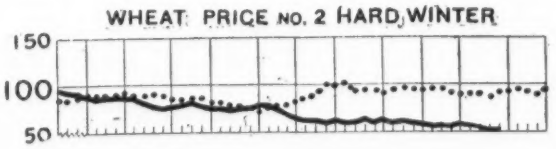
HOG RECEIPTS



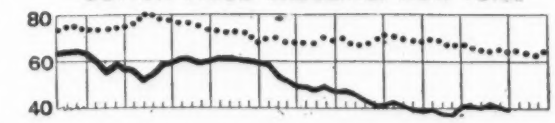
FISHER'S WHOLESALE PRICE INDEX*



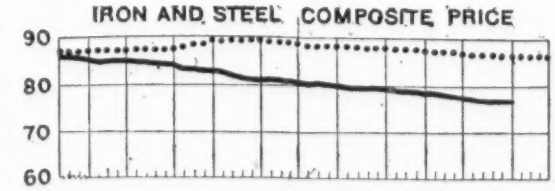
WHEAT PRICE NO. 2 HARD WINTER



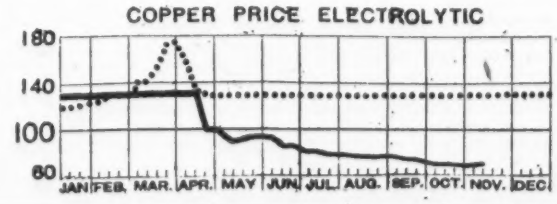
COTTON PRICE MIDDLING, NEW YORK



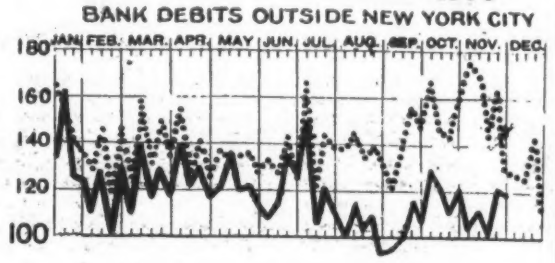
IRON AND STEEL COMPOSITE PRICE



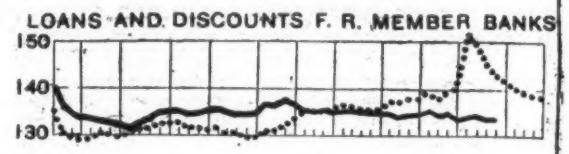
COPPER PRICE ELECTROLYTIC



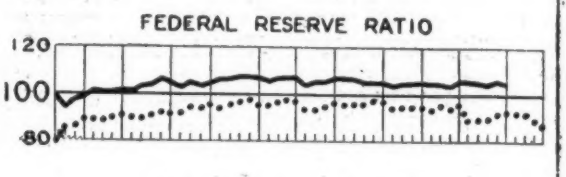
BANK DEBITS OUTSIDE NEW YORK CITY



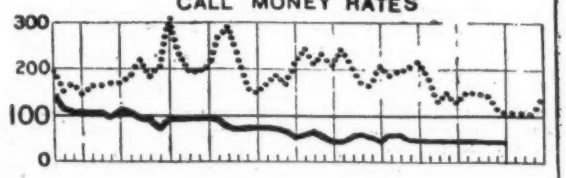
LOANS AND DISCOUNTS F. R. MEMBER BANKS



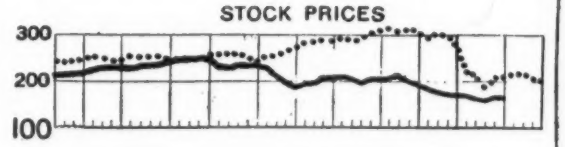
FEDERAL RESERVE RATIO



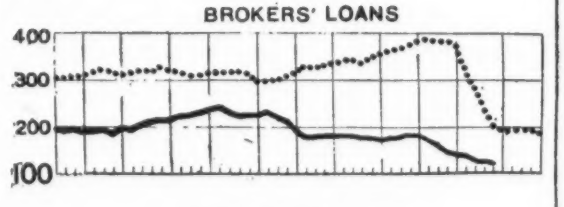
CALL MONEY RATES



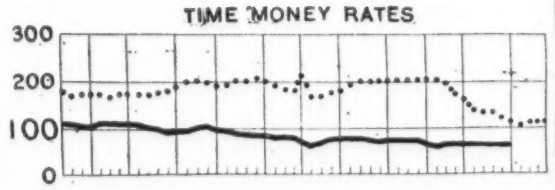
STOCK PRICES



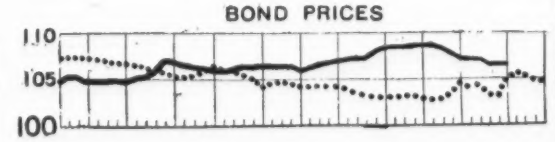
BROKERS' LOANS



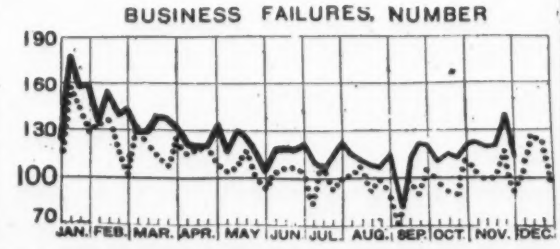
TIME MONEY RATES



BOND PRICES



BUSINESS FAILURES, NUMBER



★ RELATION TO WEEKLY AVERAGES 1927-1929 PER WEEK SHOWN.

* RELATIVE TO 1926=100

CONFIRMS BUS ROUTES

Trenton, N. J., Dec. 5.—The City Commission here has passed a resolution confirming the routes of seven bus lines which now stop at the Trenton and Lambertville line's station on North Willow Street between Quarry Place and West Hanover Street. As a result of this action, John T. Wilkins, operator of the Lambertville route, gave assurance that there would be constructed at the point in question a terminal which all seven lines will use.

STARTS NEW BUS LINE

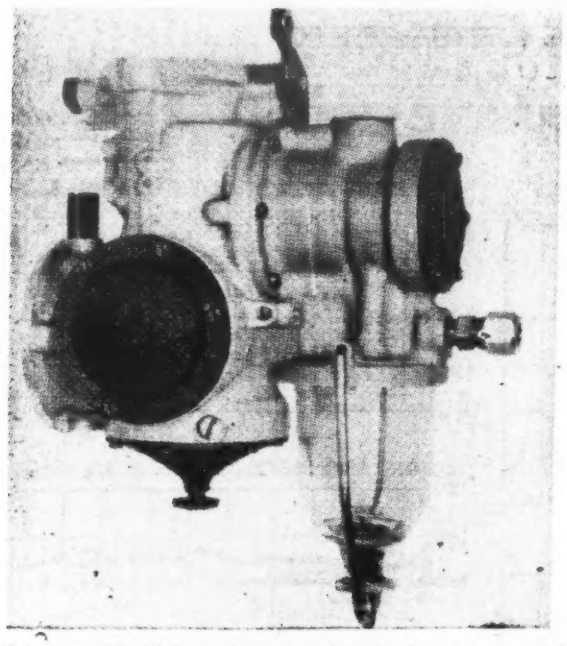
Indianapolis, Ind., Dec. 5.—A new bus line was inaugurated through Indianapolis today with service being started by the Great Eastern Stages from St. Louis, Mo., to Pittsburgh and Philadelphia, Pa., and Washington, New York and other Eastern cities. The latest type buses with reclining chairs are being used on the route.

GETS BUS FRANCHISE

Trenton, N. J., Dec. 5.—The Public Utilities Commission announces its approval of municipal consents granted to the New Milford Transportation Company for the operation of buses on the Hackensack-Midland Park route.

Production -- Engineering -- Factory -

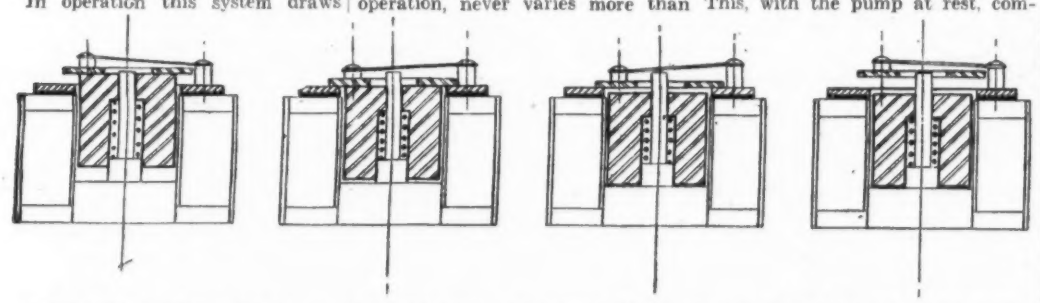
Stewart-Warner Fuel System



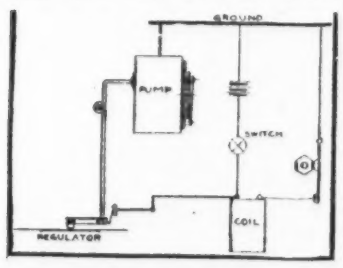
Complete assembly Stewart-Warner carburetor fuel pump and filter

Stewart-Warner Corporation, Chicago, Ill., has developed a fuel system combinatoin of an electric fuel pump and a fuel filter with an improved carburetor to form a single unit. It is applicable without engine or car change of any sort, it is claimed, and its installation involves only the mounting of the carburetor.

In operation this system draws fuel directly from the tank through the usual fuel pipe and through its filter chamber and delivers it directly to a riser chamber in which a constant level is maintained and from which fuel is drawn as required. Structurally the filter and pump comprise a sub-assembly attached to the side of the carburetor riser.



OPERATION CYCLE OF THE ELECTRIC PUMP PLUNGER AND CIRCUIT BREAKER: At the left are shown the plunger and armature in their utmost positions, and pressed firmly together by the coiled plunger spring. This is the "rest" position of the pump parts. Closure of the circuit at the regulator causes the plunger to be drawn in, the armature adhering firmly to it by reason of the magnetic pull induced between them, as shown in the second diagram. In the third view the relatively very strong pull between the plunger and its so-called stop has separated the plunger from the armature, thus opening the circuit and freeing the armature, so that its spring returns it to its out position, as in the fourth diagram



How the electric fuel system is wired into the car ignition circuit.

The carbureor riser chamber is closed at the botom by a flexible diaphragm clamped in place between the carburetor body and a conical cover. Mounted on a metal plate located just above the diaphragm are a pair of electric contact points that are pressed together by a spring acting against the under side of the diaphragm. These points constitute the pump regulator in that they cause the pump to run when they are brought together and to stop when they are separated.

With the system installed, turning the ignition switch "on" starts the pump and it continues to supply fuel until the level in the carburetor riser is sufficiently high to provide pressure enough upon the regulator diaphragm to cause the regulator contact points to separate and stop the pump.

Adjustment of the strength of the spring acting against the diaphragm adjusts the height of the fuel level at which the pump circuit is opened. The fuel level, in operation, never varies more than plus or minus .030 to .040 inches from its set position.

The plunger itself is the pump piston which is supported and guided on a non-magnetic center-pin pressed into the stationary "stop." The magnetic pull is exerted between the "stop" and the plunger. A coil spring concentric with the plunger and its guide pin returns the plunger to the "out" position. At the end of the "out" stroke, the pump circuit breaker is automatically closed and the cycle repeated under the control of the regulator in the bottom of the riser.

The mean current at maximum capacity of seventeen gallons per hour is .6 ampere at 6 volts, with the mean current at lesser demands in the same ratio of approximately .035 amperes per gallon per hour. The plunger clears the clyinder by .010 inch all around and, supported solely by its center guide pin, is provided with bakelite rings, alternated with others of gasket material which effectively pack it while leaving it free and self-adjusting.

The pump unit slips into the housing against a ring gasket, thus sealing from each other the chambers at each end of the plunger. This, with intake and outlet valves of the disk flapper type at each end makes the pump double acting.

The standard pump, used in all systems, up to and including the one-and-one-half-inch carburetor size, is of .825 inch bore, with .050 inch stroke, of circuit breaker armature and .065 inch possible stroke of plunger. The full load speed of this pump in the one-and-one-quarter inch sizes is 1,230 to 1,250 cycles per minute at 17 to 17.5 gallons per hour, at a current of 6 amperes at 6 volts.

The cylinders of these pumps are made of hard drawn brass and also form the sleeve of the spool carrying the winding.

A feature is incorporated in the pump sub-assembly housing, in that, after passing through the filter, the fuel is made to pass a valve seating in the same direction as the flow. This, with the pump at rest, completely seals the tank fuel outlet and prevents flooding. Opposite this valve is a diaphragm, whose outer surface is exposed to atmospheric pressure, through a vent hole in the housing and whose inner surface is exposed to the pump intake pressure. A small reduction of pressure only at the pump intake is required to deflect the diaphragm

(Continued on Page 12)

Motion Pictures Reveal Secret of Engine Knock During Combustion

New York, Dec. 5.—Motion pictures of combustion in a gasoline engine, which reveal the nature of engine knocking, and other recent developments in research on anti-knock fuels, were described tonight by T. A. Boyd of the General Motors Research Laboratories, Detroit, Mich., in an address before the New York section of the American Chemical Society on "Recent Advances in the Chemisty of Motor Fuels," at Havemeyer Hall, Columbia University. Dr. J. G. Davidson of the Carbide and Carbon Chemicals Corporation, New York city, chairman of the section, presided.

"There are 25,000,000 chemists in the United States, an average of one chemist per family," said Mr. Boyd. "The chemists just referred to are our automobile engines. Every single engine is a discriminating analytical chemist. A gasoline engine can detect differences in chemical constitution between two fuels handed to it and can do it quickly and with greater certainty than can the best organic chemist present. If the composition of the fuel is not what it ought to be, the engine announces the fact decisively in the form of the complaint called knock.

"The ideal gasoline must be plentiful, it must be cheap, it must have a high content of energy, it must be easy to vaporize and it must be knock-free. Gasoline, as we now know it, meets all of these requirements, excepting only the last one. In respect to the item of being altogether free from knock, gasoline is far from ideal."

In discussing the high energy content of gasoline, Mr. Boyd pointed out that this fuel contains energy several times as concentrated as that in the common explosives.

"Gunpowder, as you may know," he added, "was the fuel used in what is thought to have been the very first internal combustion engine. Christian Huygens, a Dutch experimenter, has been credited with trying out that idea about the year 1680. But for good reasons his example was not followed in later and more successful engines."

Since freedom from knock is the one important quality gasoline lacks, recent research projects in the chemistry of motor fuels have centered around this problem. They have taken three directions: Development of processes for improving the anti-knock quality of fuels, determination of the relationships between the chemical make-up of fuels and their tendencies to knock, and extension of our knowledge of what knock is.

In studying the exact nature of knock, or detonation, Dr. Lloyd Withrow, of the General Motors Research Laboratories, photographed the inside of a gasoline engine during satisfactory performance and during knocking.

"You will appreciate the fact," Mr. Boyd continued, "that making the combustion reaction in an engine 'sit' for its photograph is not an easy thing to do. In fact, combustion won't sit at all, but has to be caught on the fly. Very ingenious methods have accordingly been used to get these photographic records of what goes on in the cylinder of the gasoline engine.

"A narrow quartz window, extending all the way across the combustion chamber, or the full length of it, was placed in the top of the cylinder head. The length and location of this window were such that the whole sweep of combustion, starting from the spark plug and ending at the far side of the combustion chamber, was visible in the camera.

"The camera contained a very fast lens, with means for focusing it, and a rotating drum with a film wound once around it. This drum rotated at a constant speed and in a direction at right angles to the axis of the window.

"What was obtained, then, when the shutter was opened was a moving picture of the flame as it dashed across from the spark plug to the opposite end of the combustion chamber. The picture differed from a regular movie, however, in that the shutter remained open all the time and in that the film moved at a constant speed, so that the image obtained was all in one piece and spread out on the film.

"Because of the way in which the pictures were taken, namely, with the flame moving in the direction from bottom to top and with the film moving simultaneously from right to left, the curve forming its left-hand edge became a plot of the

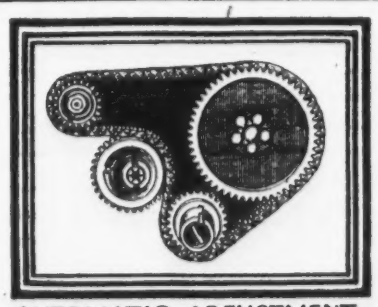
(Continued on Page 12)

MULLINS for STAMPINGS
Quality—Service—Price
MULLINS MANUFACTURING CORP.
In the Cleveland and Pittsburgh District, Main Office and Works, Salem, Ohio.
BRANCH OFFICES:
332 S. Michigan Ave.
Chicago, Ill.
7-252 General Motors Bldg.,
Detroit, Michigan

CUMULATIVE NEW PASSENGER CAR

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	DeSoto	Dodge	Durant	Essex	Ford	Franklin	Gardner	Graham	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Illinois	25	8	235	61	791	116	8	71	156	21	137	1445	41	1	63	50	38		38	22
Ill., 1929	26	*	484	97	1233	211	25	135	497	63	490	2529	43		103	238	156	5	126	24

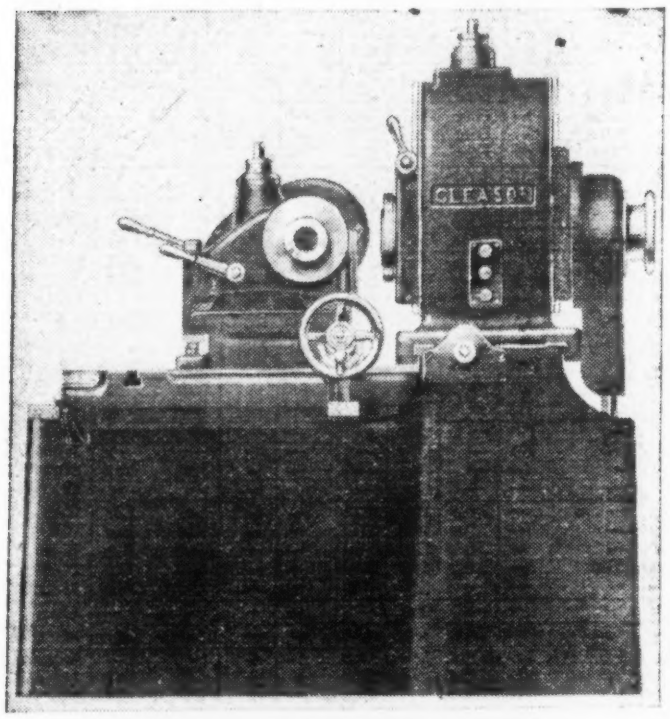
*Not in production at that time.



Something to be Proud of .
LINK-BELT AUTOMOTIVE
Built and backed by Link-Belt, an engineering organization that has served and grown with the Automotive

Equipment—Development

Gleason Works Announces New Gear Testing Machine



GLEASON NO. 13 universal gear testing machine

The Gleason Works, Rochester, N. Y., announces its new No. 13 universal gear testing machine. Straight and spiral bevels with any shaft angle, hypoids, helical, angular helical, internal, herringbone and spur gears can all be tested on the new machine, according to the manufacturers. It has a capacity for gears up to thirteen inches outside diameter.

Gears may be tested on this machine by running them together, either with or without load. The load is applied manually by a brake operating on the driven spindle.

The frame is cast in one piece, and is of heavy section with liberal ribbing to obtain rigidity. With the adjustments provided the operator can set this machine up to test any type of gear within its capacity, it is claimed. The adjustments can also be used to estimate the amount of change required in the settings of the cutting machine to provide the desired tooth bearing in the correct mounting of the gears.

The driver or pinion spindle can be operated in either direction. It is mounted in a head which can be adjusted vertically on a column for obtaining the necessary offset of the pinion from the center of the gear. This adjustment is made with a lead screw while a dial graduated to show .001 inch indicates the setting. The column has a horizontal adjustment on the frame for testing angular gears with a long cone distance. An overarm support for the pinion head is furnished.

The gear or driver head has three adjustments. The head is mounted on a slide which provides a horizontal adjustment to take care of the mounting distance of the gear. This slide swivels on a base which permits an angular setting from zero to 180 degrees. This base has a horizontal adjustment on the frame to provide for a change in the mounting distance of the pinion. The angular setting can be made to an accuracy of 20 seconds, it is stated, while the two horizontal adjustments are made by means of lead screws with dials graduated to .001 inch. Both heads can be clamped securely in any desired position if a quantity of gears is to oe tested.

a quantity of gears are to be tested.

The spindles are both mounted on ball bearings. These bearings are constructed in such a way that when mounted in position on the spindle, sufficient initial load is introduced to eliminate all evidence of radial or axial deflection under ordinary operating conditions. The noses of the spindles are heat-treated, and all taper holes are ground with the spindles in place in their own bearings. The spindles in which the gears are mounted are bored 2.292-inch diameter at the large end, with ½-inch taper per foot for a depth of 6 inches. If desired, a larger bored spindle can be furnished for the drive head at extra cost.

There are sight oilers for convenience in maintaining the correct oil level. The oil is filtered before it reaches the bearings.

A three horse power, four-speed motor, 600, 900, 1,200 and 1,800 revolutions per minute motor with a reverse control, is used for driving the pinion spindle through a double belt. There are two size pulleys, giving eight possible spindle speeds.

Standard equipment furnished with the machine, includes the overarm support for the drive head, and all gauges, tools, etc., necessary for the operation of the machine. Arbors are not furnished, but it is advisable to have them made and shipped with the machine.

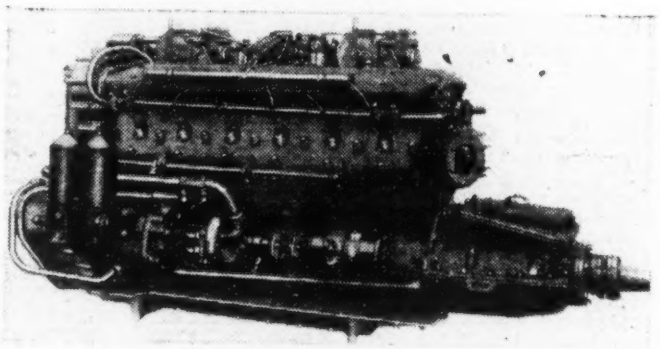
WHITE NAMES DELEGATES TO ROAD BUILDERS' SHOW

Cleveland, Dec. 5.—The White Company will be represented at the American Road Builders Association meeting and show in St. Louis, Mo., January 12 to 16, by Saunders Jones, vice-president and assistant to the president; George F. Russell, vice-president and sales manager; W. A. Maynard, sales promotion manager; H. P. Starbird, in charge of exhibit, who will be assisted by J. N. Bauman, R. J. Logan, C. I. Fraley, R. E. Laisy, R. S. Lapham, G. R. Bryan and R. J. Soulen.

PLANE COMPANY CREDITORS MUST FILE BY JANUARY 31

Newark, N. J., Dec. 5.—Creditors of the Aeromarine Klemm Corporation, plane manufacturers, of Keyport, have until January 31 to file their claims with Edwin L. Garvin, attorney for William L. Dill, equity receiver for the concern under an order issued by Judge Runyon.

New Lycoming Marine Diesel Develops 300 H. P.



NEW Lycoming 300 h. p. marine engine

Lycoming Manufacturing Company, Williamsport, Pa., announces a new 12-cylinder marine engine. The bore and stroke are each 4¼ inches, giving a piston displacement of 1010 cubic inches. The compression ratio is five to one and horsepower developed is 300 at 2,400 r. p. m.

The motor is of the "V" type, the angle between the two banks of cylinders being 70 degrees. Intake and exhaust manifolds are carried in the space between the "V". The intake manifolds are cast integrally with the removable cylinder heads, while the exhaust manifolds are bolted to these and carried below them in a space that otherwise would not be utilized. Two Holley down-draft carburetors are mounted atop the intake manifolds, while two A. C. fuel pumps, driven from camshaft eccentrics are placed alongside the carburetors. The two Delco-Remy distributors, one for each bank of cylinders, are also mounted on top of the engine, as are their respective coils.

On the starboard side is placed a Delco-Remy back geared starting motor and on the port side are grouped the oil and water pumps, generator and a duplex full flow oil filter. An oil cooler with bypass adjustment is placed above the oil reservoir, which is located on the front of the engine directly ahead of the flywheel housing and forms an extension thereof. Planetary type Joe's reverse gear and clutch are enclosed in an oil tight case at the after end of the engine with a heavy duty annular ball bearing taking up the propeller thrust, both fore and aft.

The crank shaft and main bearing design present an interesting departure from general practice. The four main bearings are 6 inches in diameter and are formed by making the crank case cheeks disc shaped, the periphery of the disc forming the bearing surface. This construction, it is claimed, reduces the bearing pressure to a minimum, at the same time reducing the overall length of the engine.

REGISTRATION STATISTICS, NOVEMBER, 1930

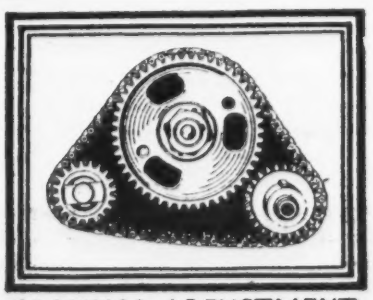
States	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Illinois	21	213	31	116	128	6	20	105	94	43	205	5	17	21	33	26	7	4,418
Ill., 1929	50	283	82	213	179	14	22	165	266	49	184	18	14	122	*	37	15	8,198

f . . . . The Performance of a
VE SILENT TIMING CHAIN

Industry since timing chains were first used.

LINK-BELT COMPANY INDIANAPOLIS DETROIT

4118-B

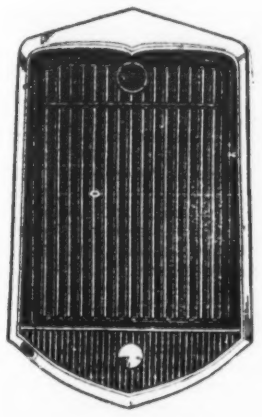


MANUAL ADJUSTMENT

(Reg. U. S. Trademark)

The Time Is Here

for the biggest year you've ever had on



AUTOMATIC
PINES
WINTERFRONTS

New vertical models with instantaneous closing device

COLD weather is here—and thousands of Pines dealers have already started on the biggest Winterfront year in their history. More than ever before motorists are turning to Pines Automatic Winterfronts. *You, too, can get this winter business—now!*

The new Pines models are the same *vertical* type as now used on the most expensive cars. They're in style with style, and the big demand is proving their popularity. New improvements include a new Pines feature, the *instantaneous closing device.* And prices have been reduced on this Winterfront, which meets every requirement.

Pines advertising is backing you up with strong sales messages which reach *your trade.* Display Pines Automatic Winterfronts, be sure that your stock is up, and you, too, can make this year *your* biggest Pines year.

If you do not handle Pines Winterfronts, get in touch with your nearest distributor now. Or write us for his name.

Remember: If your customers have a hot water heater on their car, a Pines Winterfront will more than double its efficiency.

New Prices

$15 $20

for small cars for large cars

PINES WINTERFRONT COMPANY

1151 N. Cicero Avenue, Chicago

DEALERS' INVENTORIES OFF 5% IN NOVEMBER

New York, Dec. 5.—With November production reported at 146,185 cars and trucks, a decrease of 5 per cent. under October, and 25 per cent. under November, 1929, reduction in automobile dealers' inventories throughout the country, the National Automobile Chamber of Commerce says.

Production for eleven months of 1930 was set at approximately 3,361,217 vehicles, a decrease of 39 per cent., as compared with the same period of 1929.

Service Notes

BODY SPECIALISTS

Buffalo, N. Y., Dec. 5.—The Dealers' Body and Equipment Company has been organized, as a partnership, by A. J. Grad and Joseph J. Heimenz, to establish and operate an automobile and truck body sales and service at 602-604 Broadway. The new concern will specialize in custom body building and rejuvenating work of all kinds.

PLANNING MERGER

Newark, N. J., Dec. 5.—Formal announcement that negotiations have been completed looking forward to an affiliation of the Moreland Oil Corporation of New York and the Vacuum Oil Company has been made by Robert T. Moreland, president of the corporation. The recent union of the White Star Refining Company, one of the two largest distributors in Michigan, with the Vacuum Oil Company, and the proposed affiliation with the Moreland company, will result in a substantial expansion of the Vacuum facilities for distributing gasoline, oil and other products throughout the Middle West.

NEW SERVICE STATION

Buffalo, N. Y., Dec. 5.—E. J. Stockman has filed plans with the city building commission for the construction of a one-story concrete and steel garage and service station at 1763 Fillmore Ave.

NEW FENDER TAIL LIGHT

Racine, Wis., Dec. 5.—A new fender tail light, chromium plated, has been added to the Teleoptic Corporation's line of automatic signal lights. These lights flash a warning signal notifying the observer whether the motoris is going to stop or make a right or left turn. The concern will not discontinue its cowl mountings, according to B. L. Bobroff, president.

ERECTING GARAGE

New Brunswick, N. J., Dec. 5.—Samuel Kaplan of 295 Burnet St. has started to erect a large garage and showroom on the property formerly occupied by the Strong Hardware Company on Burnet Street.

KEY TO ABBREVIATIONS USED IN THIS TABLE

*In addition to its regular line Oldsmobile also offers a de luxe line. De luxe equipment includes: Six wire wheels (with six tires and tubes), two wheels carried in front fender wells and securely locked in position, chromium-plated headlamps, four spring boots, folding trunk rack at rear and sheet metal fenders, etc., ducoed in color on those models on which ducoed sheet metal is more harmonious than is black enameled sheet metal. It is also a special line for 1930.

SPEEDOMETER

AC—AC Spark Plug Co., Flint, Mich.
NE—North East Appliance Corp., Rochester, N. Y.
Ste—Stewart-Warner Speedometer Corp., Chicago.
*Var—Various makes.

CLOCK

Borg—Borg Clock Co.
Elgin—Elgin Watch Co.
Jag—Jaeger Watch Co., New York city.
NH—New Haven. See Phi.
Phi—Phinney-Walker Co., New York city.
Ster—Sterling Clock Co., La Salle, Ill.
Tho—Seth Thomas Clock Co., New York, N. Y.
Wal—Waltham Watch Co., Waltham, Mass.
*Optional.

FUEL GAUGE

AC—AC Spark Plug Co., Flint, Mich.
K-S—King Seeley Corp., Ann Arbor, Mich.
Mot-M—Moto Meter Gauge and Equipment Corp., Long Island City, N. Y., and La Crosse, Wis.
Ster—Sterling Clock Co., La Salle, Ill.

LOCK

BS—Briggs-Stratton Co., Milwaukee.
Blos—Blossom. Delco-Remy Corp., Anderson, Ind.
Ele—Mitchell Specialty Co., Holmesburg, Pa.
DR—Delco-Remy Corp., Anderson, Ind.
Her—Hershey Mfg. Co., Chicago.
Joh—Johnson Automobile Lock Co., St. Louis, Mo.
NE—North East Appliance Corp., Rochester, N. Y.
Sha—Shaler Lock Co., Milwaukee, Wis.
Yal—Yale & Towne Mfg. Co., Stamford, Conn.

SPARK PLUG

AC—AC Spark Plug Co., Flint, Mich.
Cha—Champion Spark Plug Co., Toledo, O.

BATTERY

Ex—Electric Storage Battery Co., Philadelphia.
Nat—National Lead Battery Co., St. Paul, Minn.
Pre—Prest-O-Lite Co., Indianapolis, Ind.
USL—U S L Battery Corp., Niagara Falls, N. Y.
Wil—Willard Storage Battery Co., Cleveland, O.
*Var—Various makes—Exide, Willard, Delco-Remy and USL.
**Both Exide and Delco-Remy used.

HEAT INDICATOR

AC—AC Spark Plug Co., Flint, Mich.
Mot-M—Moto Meter Gauge and Equipment Corp., Long Island City, N. Y., and La Crosse, Wis.
Ste—Stewart-Warner Speedometer Corp.
Ster—Sterling Clock Co., La Salle, Ill.
*Var—Various makes.

CIGAR LIGHTER

*Cigar lighters in many cases are optional equipment, and are not standard on all models; the names of lighters shown indicate the makes supplied to various car makers.

Cas—Casco Products Corp., Bridgeport, Conn.
GR—Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
NE—North East Appliance Corp., Rochester, N. Y.
Cuno—Cuno Engineering Corp., Meriden, Conn.

SMOKING AND VANITY SETS

AWS—Art Metal Works, Newark, N. J.
GR—Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
Lin—Linden.
VS—Van Sicklen Corp., Elgin, Ill.
Tern—Ternstedt Mfg. Co., Detroit, Mich.
Cuno—Cuno Engineering Corp., Meriden, Conn.

BODY FINISH

Ditz—Ditzler Color Co., Detroit, Mich.
Duc—E. I. du Pont de Nemours & Co., Philadelphia.
Gli—Glidden Co., Cleveland, O.
Mur—Murphy Varnish Co., Newark, N. J.
Val—Valentine & Co., New York city.
*Various other lacquers used.
†Also Gli.

STOP AND PARKING LIGHTS

Cor—Corcoran Lamp Co.
Vic—Cincinnati-Victor Co., Cincinnati, O.
Aga—Federal Pressed Steel Co., Chicago.
Gui—Guide Lamp Corp., Anderson, Ind.
Hal—C. M. Hall Lamp Co., Detroit, Mich.
Ind—Indiana Lamp Corp., Connersville, Ind.
Ryan—Ilco Sales Corp., Detroit.
Sto—Stover Signal Engineering Co., Racine, Wis.
JB—The Jno. W. Brown Lamp Mfg. Co., Columbus, O.
Wood—Woodlite, Ltd., Los Angeles, Cal.

WINDSHIELD WINGS

Kok—Kokomo Automoive Mfg. Co.
Per—Perfection Co., Chicago.
†Not standard equipment.

HEATER

Gla—Gladiator Mfg. Co., Auburn, Ind.
Kel—Kelch made by Grand Rapids Metalcraft Corp., Grand Rapids, Mich.
*Optional.
**Not standard equipment on Cadillac V-12.

BUMPERS

Alloy—Steel Spring & Axle Co., Jackson, Mich.
Bad—Badger Mfg. Corp., Milwaukee.
Bif—Biflex Corp., Waukegan, Ill.
Buck—See Cen.
Cen—Central Brass & Fixture Co., Springfield, O. Also makers of Buckeye bumpers.
CG—CG Spring & Bumper Co., Detroit.
Eat—Eaton Axle & Bumper Co., Cleveland.
Gen—General Spring and Bumper, Detroit.
N-M—New Method Sales Co., Allegan, Mich.
Ste—Stewart-Warner Speedometer Corp., Chicago.
†Extra equipment.
*Also using Eat.
‡Stutz models MA and MB used Standard Steel Spring.

WIRE WHEELS

Budd—Budd Wheel Co., Detroit, Mich.
MotoW—Motor Wheel Corp., Lansing, Mich.
Day—Dayton Wire Wheel Co., Dayton, O.
K-H—Kelsey-Hayes, Detroit, Mich.
Buffalo—Wire Wheel Corp. of America, Buffalo, N. Y.
*On some models.
**Using both Budd and Kelsey-Hayes.
†Not standard equipment.
‡Using both Kelsey-Hayes and Motor Wheel Corp.

SHOCK ABSORBERS

Gab—The Gabriel Company, Cleveland.
Hou—Houde Engineering Corp., Buffalo, N. Y.
Lov—Delco Products Corp., Dayton, O.
Mon—Monroe Auto Equip. Mfg. Co., Monroe, Mich.
Wahl—Wahl Co., Chicago, Ill.
Wat—John Warren Watson Co., Philadelphia.

Passenger Car Equipment and Accessories

NAME AND MODEL	Speedometer	Clock	Fuel Gauge on Dash	Lock	Spark Plugs	Battery	Heat Indicator	*Cig. Lighter	Smoking Set	Vanity Set	Make of Body Finish Used	Stop Light	Parking or Side Light	Windshield Wings	Heater	Front Bumper	Rear Bumper	Wire Wheels	Shock Absorber
Auburn 8-95	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	GR	—	Mur	Ind	Ind	—	*Gla	Yes	Yes	Day	Lov
Auburn 6-85	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	—	—	Mur	Ind	Ind	—	*Kel	Yes	Yes	Day	Lov
Auburn 8-125	Ste	—	K-S	Ele	Cha	USL	Mot-M	Cas	GR	—	Mur	Ind	Ind	—	*Gla	Yes	Yes	Day	Lov
Austin	NE	—	K-S	BS	Cha	USL	—	—	—	—	Duc	—	—	—	—	Cen	Cen	—	Own
Buick 8-50	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-60	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-80	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	—	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Buick 8-90	AC	—	K-S	Her	AC	**Opt	AC	—	Tern	Tern	Duc	Gui	Gui	—	—	—	—	K-H	Lov
Cadillac 8	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	Kel	Eat	Eat	K-H	Lov
Cadillac V-12	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	**	Eat	Eat	Buffalo	Lov
Cadillac V-16	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	Opt	Eat	Eat	Buffalo	Lov
Chevrolet	AC	—	AC	DR	AC	*Var	AC	—	Tern	—	Duc	Gui	Gui	—	*Own	†Own	Own	K-H	Lov
Chrysler 8	NE	Ster	Mot-M	Ele	AC	Wil	Mot-M	Cas	AWS	AWS	Duc	Hal	Hal	Per	—	NM	NM	MotoW	Hou
Chrysler 70	NE	*Wal	Mot-M	Ele	AC	Wil	Mot-M	Cas	AWS	AWS	Duc	Hal	Hal	Per	—	NM	NM	MotoW	Lov
Chrysler 66	NE	*Wal	Mot-M	Ele	AC	—	Mot-M	Cas	—	—	Duc	Hal	Hal	—	—	—	—	‡	—
Cord Front Drive	Ste	No	Mot-M	DR	Cha	USL	Ster	Cas	GR	No	Mur	Ind	Ind	No	No	Alloy	Alloy	Day	Hou
De Soto 6	Yes	No	Yes	Yes	AC	Wil	No	No	Yes	Yes	Duc	Yes	Hal	No	No	Yes	Yes	†MotoW	Yes
De Soto 8	Yes	No	Yes	Yes	AC	Wil	Yes	No	Yes	Yes	Duc	Yes	Hal	No	No	Yes	Yes	†MotoW	Yes
Dodge DD	NE	—	Mot-M	—	AC	Wil	—	—	VS	VS	—	Hal	—	—	—	Yes	Yes	†Budd	Lov
Dodge 8	NE	—	Mot-M	—	AC	Wil	Mot-M	—	VS	VS	—	Hal	—	—	—	Yes	Yes	MotoW	Lov
Durant 610	NE	No	Mot-M	Ele	AC	USL	Mot-M	No	No	No	—	Cor	—	—	—	—	—	MotoW	Mon
Durant 612	NE	No	Mot-M	Ele	AC	USL	Mot-M	No	No	No	—	Cor	—	—	—	—	—	MotoW	Mon
Durant 614	NE	No	Mot-M	Ele	AC	USL	Mot-M	No	—	—	—	Cor	—	—	—	Eat	Eat	MotoW	Mon
Durant 617	NE	No	Mot-M	Ele	AC	USL	Mot-M	GR	—	—	—	Cor	—	—	—	—	—	MotoW	Mon
Elcar 75-A	Ste	—	Mot-M	Sha	Cha	USL	Mot-M	Yes	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Lov
Elcar 96	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Yes	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Lov
Elcar 130	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Yes	—	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Lov
Elcar 140	Ste	Borg	Mot-M	Sha	Cha	USL	Mot-M	Yes	Yes	—	Mur	Hal	Hal	—	—	Ste	Ste	K-H	Lov
Essex Super Six	Ste	—	Mot-M	Ele	AC	Ex	Mot-M	—	—	—	—	JB	JB	—	—	Own	Own	MotoW	Mon
Ford A	*Var	—	Own	Ele	Cha	Own	—	—	—	—	—	Yes	—	—	—	—	—	Cwn	Hou
Franklin	NE	Wal	K-S	Yal	Cha	Nat	—	Cas	*Var	GR	*Duc	Cor	Cor	—	—	Gen	Gen	MotoW	Lov
Gardner 158	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cuno	VS	VS	†Ditz	—	Cor	—	—	—	—	MotoW	Lov
Gardner 148	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cuno	VS	VS	†Ditz	—	Cor	—	—	CG	CG	MotoW	Lov
Gardner 136	Ste	*Borg	Mot-M	DR	Cha	Pre	Mot-M	Cuno	VS	VS	†Ditz	—	Cor	—	—	CG	CG	MotoW	Lov
Graham Stan. 6	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Sp. 6	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Stan. 8	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Sp. 8	NE	—	K-S	Her	Cha	Wil	Mot-M	—	GR	GR	—	Hal	Hal	—	—	Ste	Ste	MotoW	Lov
Graham Cust. 8	NE	*Ster	K-S	Her	Cha	Wil	Mot-M	Cas	GR	GR	—	JB	JB	—	—	Ste	Ste	MotoW	Hou
Hudson Greater 8	Ste	—	Mot-M	Ele	AC	Ex	Mot-M	—	—	—	—	Hal	Hal	—	—	Own	Own	MotoW	Gab
Hupmobile Cen. 6	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile Cen. 8	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile U	Ste	Wal	Ster	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile H	Ste	Wal	Ster	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Hupmobile C	Ste	Wal	Mot-M	Ele	Cha	Wil	Mot-M	Cas	VS	—	Val	Hal	Hal	—	—	—	—	K-H	Gab
Jordan Mod. 8 G	Ste	Ster	Mot-M	Her	Cha	Wil	Mot-M	Cas	GR	—	Ditz	Ind	JB	—	—	Cen	Cen	K-H	Gab
Jordan Mod. 8 T	Ste	—	Mot-M	Her	Cha	Wil	Mot-M	—	VS	—	Ditz	Ind	Ind	—	—	Cen	Cen	K-H	Gab
La Salle	AC	Jag	Mot-M	DR	AC	Ex	AC	Cas	Tern	Tern	Duc	Hal	Hal	—	*Kel	Eat	Eat	K. H	Lov
Lincoln 8	NE	Tho	K-S	Her	Cha	Ex	Mot-M	Cas	Cuno	Yes	Duc	Own	Own	Own.	—	Bif	Bif	Own	Hou
Mar.-Roosev'lt 8	Ste	—	Mot-M	DR	Cha	Nat	—	—	—	—	Val	Vic	Vic	—	—	Ste	Ste	†Budd	Lov
Marmon Eight-69	NE	—	Mot-M	DR	Cha	Nat	Mot-M	—	GR	—	Val	Cor	—	Kok	—	CG	CG	†Budd	Wahl
Marmon Eight-79	NE	—	Mot-M	DR	Cha	Nat	Mot-M	Cas	—	GR	Val	Cor	—	Kok	—	CG	CG	†Day	Wahl
Marmon Big 8	NE	*Ster	Mot-M	DR	Cha	Ex	Mot-M	Cas	—	GR	Val	Cor	—	Kok	—	CG	CG	†Day	Wahl
Nash Six-60	AC	—	K-S	Her	AC	USL	AC	—	Tern	—	Var	JB	JB	—	—	Cen	Cen	†MotoW	Lov
Nash Eight-70	AC	—	K-S	Her	AC	USL	AC	—	VS	—	Var	JB	JB	—	—	Cen	Cen	†MotoW	Lov
Nash Eight-80	Ste	—	K-S	Blos	AC	USL	AC	—	VS	—	Var	Cor	Cor	—	—	Cen	Cen	†MotoW	Lov
Nash Eight-90	Ste	Borg	K-S	Blos	AC	Ex	Mot-M	Cas	VS	—	Var	Cor	Cor	—	—	Eat	Eat	†MotoW	Lov
Oakland 8	NE	—	K-S	DR	AC	Wil	—	—	Tern	Tern	Duc	Gui	Gui	—	—	Own	Own	MotoW	Lov
*Oldsmobile	AC	—	K-S	DR	AC	Wil	AC	—	Tern	—	Duc	Gui	—	—	—	Own	Own	MotoW	Lov
Peerless Stand. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Cor	Cor	No	No	Cen	Cen	†Budd	Gab
Peerless Mast. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Gui	Cor	—	—	Eat	Eat	Day	Gab
Peerless Cust. 8	AC	Ster	Mot-M	BS	Cha	Wil	Mot-M	Cas	GR	No	Val	Gui	Cor	—	—	Eat	Eat	Day	Gab
Pierce-A., C, B, A	NE	Wal	Mot-M	Her	Cha	Wil	Mot-M	NE	VS	VS	—	Aga	Aga	—	—	Eat	Eat	K-H	Lov
Plymouth	NE	—	Mot-M	Sha	AC	Wil	—	—	—	—	Duc	Hal	Hal	—	—	Gen	Gen	‡	—
Pontiac	AC	—	K-S	DR	AC	Pre	—	—	Tern	—	Duc	Gui	Gui	—	—	Own	Own	MotoW	Lov
Reo Royale	Ste	Elgin	K-S	DR	Cha	Wil	—	Yes	Yes	No	Mur	—	Gui	No	No	CG	CG	MotoW	Lov
Reo Fly'g Cloud 8	Ste	Elgin	K-S	DR	Cha	Wil	—	Yes	Yes	No	Mur	—	Gui	No	No	CG	CG	MotoW	Lov
Reo Fly'g Cloud 6	Ste	Elgin	K-S	DR	Cha	Wil	—	Yes	Yes	No	Mur	—	Gui	No	No	CG	CG	MotoW	Lov
Studebaker Six	Ste	—	K-S	Yal	Cha	Wil	Mot-M	—	—	—	—	Ind	—	—	No	Eat	Eat	K-H	Lov
Studebak'r Dict. 8	Ste	—	K-S	Yal	Cha	Wil	Mot-M	—	—	—	—	Ind	Gui	—	—	Ste	Ste	K-H	Lov
Stud. Com. 8-70	Ste	—	K-S	Her	Cha	Wil	Ste	—	—	—	—	Gui	—	—	—	Ste	Ste	K-H	Hou
Stud. Pres. 8-80	Ste	NH	K-S	Her	Cha	Wil	Ste	Cuno	*Var	—	—	Gui	—	—	—	Ste	Ste	K-H	Hou
Stud. Pres. 8-90	Ste	NH	K-S	Her	Cha	Wil	Ste	Cuno	—	—	—	Gui	Gui	—	—	Ste	Ste	K-H	Hou
Stutz L A-M A	Ste	Wal	Mot-M	Her	Cha	Pre	Mot-M	Cas	Lin	Lin	Val	Ind	Ind	Kok	—	‡Buck	Buck	K-H	Gab
Viking 8	AC	—	K-S	DR	AC	Wil	AC	—	VS	VS	Duc	Gui	—	—	—	Own	Own	MotoW	Lov
Whippet 96 A	NE	No	No	Yes	Cha	USL	No	—	No	No	Var	Yes	No	No	No	No	No	Buffalo	Mon
Willys 6-98 B	NE	No	Mot-M	Yes	Cha	USL	Mot-M	—	No	No	Var	Yes	Yes	No	No	No	No	†K-H	Mon
Willys Eight-80	NE	No	Mot-M	Yes	Cha	USL	Mot-M	—	Yes	No	Var	Yes	Yes	No	No	No	No	†K-H	Mon
Willys-Knight 87	NE	No	Mot-M	Ele	Cha	USL	Mot-M	—	Yes	No	Var	Yes	Yes	No	No	No	No	†Budd	Mon
Willys-K. 66B	NE	No	Mot-M	Ele	Cha	USL	Mot-M	—	Yes	No	Var	Yes	Yes	No	No	No	No	*Budd	Wat

MERCHANDISING
ACCESSORIES
EQUIPMENT

WHOLESALE

DISTRIBUTION
SHOP EQUIPMENT
REPLACEMENTS

ARIZONA CONCERN HOLDS TRADE THROUGH 'CAFETERIA SERVICE'

Hathaway of Phoenix Believes Customers Resent "Hide and Seek" Parts Displays; Emphasizes Installation Department

"CAFETERIA service" throughout the main salesroom and an installation department with complete shop equipment are the two outstanding features of the new quarters of the Western Auto Supply Company, Phoenix, Ariz.

An inspection of the display at the opening revealed the fact that more than 2,000 pieces of stock parts are within easy reach of the customer and salesmen, and that the three-way drive into the installation room leads the customer directly to a force of trained mechanics ready to make instantaneous installation of batteries, tires and other accessories.

"Horizontal display is better than vertical storage," says K. D. Hathaway, local manager, "and the drive-in is better than the drag-out system."

Mr. Hathaway, as one of the founders of this big distribution company, has had first-hand experience of an unusual variety in selling motor car equipment. He started in a door-to-door campaign of Ford specialties, built up a mail order business from his home, and now conducts an extended and extensive business through the southwest.

In regard to the installation department, Mr. Hathaway came to his present very positive conviction of its necessity by observing the habits of customers over a long period of experimental selling. He believes it is an asset, working to the convenience of the customer and to the increase in profits, both directly and indirectly. And so thoroughly is he assured of this that he has made the Phoenix store the standard type for the future.

"If you don't provide a place for making proper installation of your line of accessories the customer is constantly leading a good salesman off into an alley to put on a tire when nine times in ten it's the last thing he can do efficiently.

"The sale depends on immediate installation in only 9 per cent. of the cases that I have observed and recorded, but in those nine cases out of a hundred the salesman hates to miss the sale, the company suffers directly if he does miss it, but more to the point is the indirect effect on the public mind, for the 9 per cent, of rush customers are of the nervous type, somewhat fussy if you will, but constant advertisers.

"The customer who tells you how to run your business tells his neighbors how you do run it," says the owner. Mr. Hathaway believes in learning from his customers.

The beautiful order of a well-stocked store, when properly fitted up with steel bins and stock cases, is something to brag about, but it fails to sell goods, according to this aggressive manager.

"The vertical racks are fine in the warehouse, and they'll do all right in providing a proper place for pigeons to nest and raise their their young, but, when it comes to selling auto equipment, you might as well equip your store with parallel bars and swinging rings.

"Give the clerk time to exercise his judgment." The customer is interested, not so much in the clerk's ability to climb ladders, as to show him the advantages of the goods on display. Mr. Hathaway trains his clerks to know their lines and to study to know their customers. "The trouble with the complicated arrangement of vertical bins," he says, "is that the clerk thinks he has mastered his job when he has learned to locate all the hidden stock that you have laid out good money for, and then tried to conceal.

"Why not just admit you have the goods and lay them out?"

Tire racks down one side and batteries on display on the other, with a general assortment on long tables fitted with sideboards, lead the customer through the two wide aisles to the rear exit and the entrance to the installation shop. This shop is 45 by 85 feet, with plenty of clearance at the three entrances.

N. J. JOBBERS WARN TRADE ON NEW LAW

Newark, N. J., Dec. 5.—Jobbers in this section are sending out notices to their trade warning them to observe the new gasoline pump ruling which went into effect in New Jersey on November 30. Under the law no gasoline pump may be operated unless a gauge has been installed which permits the purchaser to observe the flow of gasoline through the pump.

Failure to observe the law relative to the gasoline pump gauge will bring about a $25 fine to all violators.

The new law inaugurated to prevent gasoline station owners from using the old style pumps which does not permit a check on whether or not gasoline is being pumped from the storage tank. With the new gauges it is possible to detect if gasoline is not passing through the connection.

Editor's Column

QUOTAS are useless unless they are supplemented by and compared with records of actual performance. Constant study of the sales records for each customer, each town and each territorial division and application of the knowledge this study reveals are essential to efficient sales management, according to H. A. Harvey of the U. S. L. Battery Corporation.

"Unless the sales manager knows in advance where each salesman will be each day and what calls each salesman made and what results he obtained each preceding day, it is impossible to direct and co-ordinate work of salesmen. We use for this purpose (1) route sheets, made up two weeks in advance, and corrected weekly; (2) daily reports, showing the salesmen's activities each day, and (3) special reports when it is necessary to elaborate on some particular subject or cover a general condition.

"The supervision of salesman's activities is accomplished by study of these various reports of salesmen in conjunction with the quotas and record," he continues. "We do not find it practicable to determine in advance every detail of the salesman's program. We allow him considerable latitude in planning his own work, varying his standardized routine in accordance with the special needs which develop from time to time. We do, however, check the salesman's proposed routing to make sure that it represents a logical and efficient use of the salesman's effort.

"We do not require him to learn and use verbatim a standardized sales talk, but we insist that he be able to make a logical and orderly presentation of the product, along definitely standardized lines, varied with each prospect as conditions seem to require.

"Let me suggest as a highly instructive and illuminating plan that you require each one of your salesmen to approach you as a prospect and sell your line to you. Check over his portfolio and equipment for selling at the same time, and see if each one is carrying with him your standardized sales kit. If you have never done this you may be somewhat chagrined to learn how poor a presentation of your product many of your salesmen are making.

"We are thoroughly convinced of the value or having salesmen, except supervisors of large districts, travel by automobile, even though the expense is greater than by using trains. The saving in time for the salesmen, the advantage of being able to carry signs, literature and samples, contribute greatly to the effectiveness of salesmen using cars. In small territories where salesmen are selling direct to the trade the use of a truck for combined selling and delivering of batteries undoubtedly results in greater volume. The cost of this method must be balanced against the results, as truck sales in many cases are carried on unprofitably because of the greater increased expense. It is necessary to balance here the selling cost against the results and to use truck distribution only if a plan can be devised which will result not only in a profit, but in a greater profit than would be obtained by other methods.

"Our observation of straight commission methods of paying salesmen has caused us to conclude that it is seldom satisfactory. During the peak of the season a salesman will receive much more than he is worth. During the dull season his compensation will be so small that you cannot hold him. On a straight commission basis he is seldom inclined to do the missionary and research work necessary to the development of a territory. We favor instead a salary and expense arrangement, with a moderate bonus over a year's period for exceeding his quota.

"Manifestly a great deal depends upon the selection of salesmen. Probably all too frequently good men are condemned for lack of results when the trouble is with their training or supervision, or special conditions for which insufficient allowance is made. A great deal depends on the man himself, however, and a great waste of time and money can be minimized if the right selection is made. The claims of character analysis experts that they can with great accuracy select the best man for any given job or determine the vocation that any man should follow are now generally exploded. There is but one final test of a salesman and that is his ability to get results in the field. But a great many men can be weeded out without this test by the exercise of ordinary judgment. This should be based preferably on the opinions of a number of men rather than a single one. It should be checked up with an examination of references, bearing in mind that too often former employers fail to be entirely frank, and try to say only good things, rather than to give a complete story.

IMPROVES TIRE PLANT

Evansville, Ind., Dec. 5.—Goodrich-Silvertown, Inc., has begun building improvements at the factory warehouse branch, 4th and Vine Streets. Service improvements will include new car lubricating and tire vulcanizing equipment, additions to the road service motor truck fleet, and new system of floodlighting for the building, Henry W. Dillon, manager, stated.

APPOINTED DISTRIBUTOR

Rochester, N. Y., Dec. 5.—The Puritan Soap Company, Inc., manufacturer of an anti-freeze solution for automobile radiators, has appointed the Gordon Motor Parts, Inc., 30 Joseph Ave., as distributor of its product in western New York. The Gordon Motor Parts, Inc., maintains branch stores in Elmira, Corning, Batavia and Geneva, N. Y.

Wholesale Brevities

Albany, N. Y., Dec. 5.—Goodrich Silvertown, Inc., recently closed negotiations for a site in North Broadway, where it will erect a new structure for a warehouse, salesroom and distributing base. The lot, 125 by 233 feet, is now occupied by a gasoline station, and as soon as this is removed construction will start. It is expected the building will cost about $125,000

Boise, Ida., Dec. 5.—The Oakley Company, jobber of automotive and radio supplies for southern Idaho and eastern Oregon and distributor for the Sparton and Clarion radios, has recently opened a retail store at 924 Main St., Boise.

Buffalo, N. Y., Dec. 5.—The Great Lakes Tire Corporation, one of the largest wholesale and retail tire service organizations in western New York, operating two service stations in this city, has filed plans with the city building commission for the construction of a modern one-stop super service station at 1155 Main St., to cost more than $100,000, with machinery and equipment installations.

Waterloo, Ia., Dec. 5.—The Lewis Motor Supplies, Inc., with office at 220 West 5th St. and shop at 175 West 2d St., will soon occupy the new shop building at 320 West Park Ave., work upon which has been started by W. W. Lytle, owner. The building will be 46x70 feet, a one-story brick. It will be finished late in the year. The Lewis Motor Supplies was recently organized and has purchased the All States Parts Service. In the new location office, shop and stock departments will be combined. A. Babcock, Waucoma, is president of the new concern; R. A. Lewis, Waterloo, vice-president, and B. J. Lewis, secretary-treasurer.

Rochester, N. Y., Dec. 5.—With a capital of $20,000, the Avenue Tire Company, Inc., has been chartered to establish and operate a wholesale and retail tire, tube and rubber supply business. The new concern will establish a complete service station early in 1931. Principals are: Elizabeth Coddington, 640 Monroe Ave.; E. Rosenbloom and Samuel Rosenbloom. Temporary headquarters have been established at 270 South Goodman St.

IN THE ACCESSORY AND SERVICE FIELD

MERGER ANNOUNCED

Newark, N. J., Dec. 5.—The Carrier Engineering Corporation here has merged with the Brunswick-Kroeschell Company and the York Heating and Ventilating Corporation, it has just been announced. Including subsidiary and affiliated companies, the merger will unite fifteen concerns, five of them foreign, with total assets of approximately $15,000,000. All of the companies involved will retain their separate entities under a holding company to be known as the Carrier Corporation.

NAMED U. S. DEALER

Seattle, Wash., Dec. 5. — The Standard Service Tire Company has just been appointed Seattle dealer for United States Tire and Rubber Company, according to announcement just issued here. O. R. Anderson is president of Standard Service and general manager.

AID UNEMPLOYED

Passaic, N. J., Dec. 5.—As their share toward the relief of the suffering caused by the present unemployment situation, the Passaic and Clifton members of the Independent Gasoline Retailers' Association donated to the relief funds of the two communities a cent from the proceeds of every gallon of gasoline they sold November 27.

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AUBURN OFFICIAL SEES 1931 BUSINESS AT BETTER THAN 5-YEAR AVERAGE

Indianapolis, Ind., Dec. 5.—That the automobile business for 1931 will be better than the average business for the last five years was the forecast made here y H. L. Brinck, sales manager of the Auburn Automobile Company, Auburn, Ind., in a talk before the fifth annual meeting of the Hoosier Association of Finance Companies.

"I don't anticipate the business done in 1929 for 1931, but the year will show a slight recovery over 1930's low ebb," he said, pointing out that automotice manufacture and sales run in three-year business cycles.

"There's a good year and a year of a slight drop; a year of recovery and then another good year," he said. "The motor car business was at its peak in 1929, and the drop came in 1930, so we're due for a recovery although it will not be a record business twelve-month."

Mr. Brinck said that dealer stocks had been depleted from 1,000,000 cars in the nation on January 1, 1930, to 348,000 cars on November 12. "As a result the manufacturer and dealer are in splended shape," he said.

Automobile buying volume for the next year was estimated by the Auburn executive at 3,159,000 plasur cars and 400,000 trucks.

HUPP ADDS EIGHTEEN NEW DEALERS IN NOVEMBER

Detroit, Dec. 5.—Indicating the increased public interest in the 1931 and new model cars, eighteen dealers signed the Hupmobile franchise during the month of November, according to a report from the Detroit offices of the Hupp Motor Car Corporation. These new dealers include:

Charles B. Beach, Inc., of Hartford, Conn.; A. J. Whiteside of Lodi, Cal.; Motor Service Company of Salinas, Cal.; Yates & Stolts of Ft. Morgan, Colo.; James Loutzenhiser of Lamar, Colo.; Sterling Service Garage of Sterling, Colo.; Dewitt Motor Company of Des Moines, Ia.; Ouder Motor Company of Marlboro, Mass.; New Ulm Motor Car Company of New Ulm, Minn.; T. B. King of Hamlet, N. C.; J. Coates Remer of Goshen, N. Y.; Crossman & Davis of Ticonderoga, N. Y.; Eurskin Howe of Walden, N. Y.; C. C. Bickel of Reading, Pa., and W. C. Riefsteck of Worthington, N. D.

The new Canadian dealers are: Ronald Royal Church of Picton, Ont.; William A. Shiel of Harrison, Ont., and G. J. Algot of Derwent, Alta.

Coming Shows

SIOUX CITY

Sioux City, Ia., Dec. 5.—J. V. Thorndike has ben appointed manager for the Sioux City automobile show, which will be held in the auditorium December 18-20, officials of the automobile division of the Motor Trades Bureau, Chamber of Commerce, have announced. The dealers will make an effort to secure several models of new cars for the December showing in advance of the New York auto show later in the spring.

TRENTON, N. J.

Trenton, N. J., Dec. 5.—The 1931 show of the Trenton Automobile Trade Association will be held in the armory the week of Washington's birthday anniversay—February 22. This announcement was made at the luncheon meeting of the members of the association at the Carteret Club. John L. Brock, president, presided.

BUFFALO

Buffalo, Dec. 5.—Major C. J. Donnocker has been appointed manager of the twenty-ninth annual automobile show to be held during the week of January 10 in the 174th Regiment Armory here. He reports space sales running well ahead of those of last year.

PORTLAND, ME.

Portland, Me., Dec. 5.—The Automobile Dealers' Association of this city will hold its annual show at the Exposition Building, January 26 to 31.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

MAKE AND MODEL	Weight—5-P. Sedan	Wheel Base	Engine Make	Fan Belt Type	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H. P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Clean'r	Carburetor	Air Cleaner
Auburn 6-85	3255	120	Lyc	V	Dole	L	6	2⅛x4¾	185	*5.16	19.8	70@3400	*Alum	4	No	No	Sch	No
Auburn 8-95	3510	125	Lyc	V	Dole	L	8	2⅞x4¾	246	*5.15	26.4	95@3300	*Alum	5	Pur	AC	Sch	No
Auburn 8-125	3908	130	Lyc	V	Dole	L	8	3¼x4½	299	*5.25	33.8	125@3600	*Alum	5	Pur	AC	Sch	No
Austin	‡1130	75	Own	F	——	L	4	2.2x3	45.8	5.1	7.8	13@3000	Alum	2	—	—	Til	—
Buick 8-50	3170	114	Own	V	Dole	O	8	2⅞x4¼	220.7	4.8	26.45	77@3200	CI	5	AC	—	Mar	AC
Buick 8-60	3795	118	Own	V	Dole	O	8	3⅛x4⅜	272.6	4.63	30.02	90@3000	CI	5	AC	—	Mar	AC
Buick 8-80	4255	124	Own	V	Dole	O	8	3⅜x5	344.8	4.5	35.12	104@2800	CI	5	AC	—	Mar	AC
Buick 8-90	4340	132	Own	V	Dole	O	8	3⅜x5	344.8	4.5	35.12	104@2800	CI	5	AC	—	Mar	AC
Cadillac V-8	——	134	Own	V	Yes	LV	8	3⅜x4⅛	353	5.35	36.45	95@3000	CI	3	—	Gas	Own	—
Cadillac V 12	5480	140-143	Own	V	Own	O	12	3¼x4	368	5.5	46.9	135@3400	CI	4	AC	Gas	Own	—
Cadillac V-16	6100	148	Own	V	Yes	O	16	3 x4	452.0	5.50	57.5	165@3400	CI	5	AC	Gas	Own	None
Chevrolet	2500	109	Own	V	Yes	O	6	3⅛x3¾	194.0	5.01	26.3	46@2600	CI	3	—	AC	Car	AC
Chrysler 6	2695	*169¼	Own	V	Yes	L	6	3⅛x4¼	195.5	5.29	23.44	62@3200	*Alum	4	—	Yes	Car	No
Chrysler 70	3590	*168½	Own	V	Yes	L	6	3⅜x5	268.4	5.00	27.34	93@3200	*Alum	7	Pur	AC	Str	Un
Chrysler 66	2935	*163¼	Own	V	——	L	6	3⅛x4⅜	218.6	5.00	23.44	68@3000	Alum	7	Pur	AC	Str	Un
Chrysler 8	3365	*186⅛	Own	V	Yes	L	8	3 x4¼	240.3	5.40	28.8	82@3400	*Alum	5	Yes	—	Str	Yes
Chrysler Imp. 8	4725	*211	Own	V	Yes	L	8	3½x5	384.8	5.01	39.2	125@3200	*Alum	9	Yes	—	Str	Yes
Cord (Fr. Wh. D.)	4530	137½	Lyc	V	——	L	8	3¼x4½	298.6	5.25	33.8	125@3600	*Alum	5	Yes	AC	Sch	—
De Soto 6	2705	*169⅛	Own	V	Yes	L	6	3⅛x4⅛	189.81	5.20	23.44	60@3400	*Alum	4	—	Yes	Car	Un
De Soto 8	2965	*177	Own	V	Yes	L	8	2⅞x4	207.7	5.20	26.45	70@3400	*Alum	5	—	Yes	Str	Yes
Dodge Six D D	2668	*168⅝	Own	V	Yes	L	6	3⅛x4⅛	189.8	5.20	23.4	60@3400	*Alum	4	No	No	Car	—
Dodge 8	3043	*176⅞	Own	V	Yes	L	8	2⅞x4¼	220.7	5.20	26.45	75@3400	*Alum	5	Pur	No	Str	Un
Durant 610	——	*172	Con	V	Bish-Bab	L	4	3⅞x4¼	200	4.8	24	50@2800	Alum	3	AC	AC	Til	Til
Durant 612	2900	*172	Con	V	Bish-Bab	L	6	3¼x4	199	5.32	25.4	58@3100	Alum	4	AC	AC	Str	AC
Durant 614	2950	*172¼-176	Con	V	Bish-Bab	L	6	3¼x4	199	5.32	25.4	58@3100	*Alum	4	AC	AC	Str	AC
Durant 617	3290	*175¾-179½	Con	V	Bish-Bab	L	6	3⅜x4⅝	248	5.06	27.34	70@3000	*Alum	7	AC	AC	Str	AC
Elcar 75 A	2942	117	Lyc	V	Yes	L	6	2⅞x4¾	185	5.25	19.8	61@3000	*Alum	4	Pur	Gas	Sch	—
Elcar 140 and 130	†3980	135-130	Con	V	Yes	L	8	3⅜x4½	322	5.25	36.45	140@3300	*Alum	5	Pur	Gas	Sch	—
Elcar 96	3299	123	Lyc	V	Yes	L	8	2⅞x4⅜	246.7	5.25	26.5	90@3000	*Alum	5	Pur	Gas	Sch	—
Essex Super Six	2805	113	Own	V	——	†L	6	2⅞x4½	175.3	5.80	19.8	60@3300	Alum	3	—	Ste	Mar	AC
Ford A	2375	103½	Own	V	——	L	4	3⅞x4¼	200.5	4.22	24.03	40@2200	Alum	3	—	—	Zen	—
Franklin Trans.	3930	125–132	Own	—	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Franklin De Luxe	4220	132	Own	—	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Gardner 136	3330	122	Lyc	V	Dole	L	8	2⅞x4¾	246.6	5.15	26.5	70@3500	*Alum	4	Pur	Gas	Sch	—
Gardner 148	3500	125	Lyc	V	Dole	L	8	2⅞x4¾	246.6	5.15	26.5	100@3300	*Alum	5	Pur	Gas	Sch	AM
Gardner 158	3890	130	Lyc	V	Dole	L	8	3¼x4½	298.6	5.25	33.8	126@3300	*Alum	5	Pur	Gas	Sch	AM
Graham Std. 6	3160	115	Own	F	Dole	L	6	3⅛x4½	207	5.41	23.44	66@3200	*Alum	7	No	AC	DL	AC
Graham Spl. 6	3390	115	Own	F	Dole	L	6	3¼x4½	224	5.49	25.35	76@3400	*Alum	7	AC	AC	DL	AC
Graham Std. 8	3795	122	Own	V	Bish-Bab	L	8	3¼x4½	298	5.20	33.80	100@3400	*Alum	5	AC	AC	DL	AC
Graham Spl. 8	3875	122	Own	V	Bish-Bab	L	8	3¼x4½	298	5.20	33.80	100@3400	*Alum	5	AC	AC	DL	AC
Graham Cust. 8	4300	127	Own	F	Bish-Bab	L	8	3⅜x4½	322	5.41	36.45	120@3200	*Alum	5	AC	AC	John	AC
Graham Cust. 8	4405	137	Own	F	Bish-Bab	L	8	3⅜x4½	322	5.41	36.45	120@3200	*Alum	5	AC	AC	John	AC
Hudson Greater 8	3200	119-126	Own	V	——	L	8	2⅞x4½	233.7	5.80	26.4	87@3600	Alum	5	—	Ste	Mar	AC
Hupmobile Cen. 6	2900	114	Own	V	Yes	L	6	3¼x4¼	211.6	5.10	25.35	70@3200	Alum	4	Pur	Ste	Str	Yes
Hupmobile Cen. 8	3175	118	Own	V	Pines	L	8	2⅞x4⅝	240.2	5.20	26.45	90@3200	Alum	5	Pur	Ste	Str	Yes
Hupmobile C	3725	121	Own	V	Pines	L	8	3 x4¾	268.6	5.20	28.8	100@3200	CI	5	Pur	Ste	Str	Yes
Hupmobile H & U	**	125-137	Own	V	Pines	L	8	3½x4¾	365.6	5.20	39.2	133@3400	Alum	5	Pur	Ste	Str	AM
Jordan St. Line 80	3490	120	Con	V	Pines	L	8	2⅞x4¾	246.7	5.10	26.5	80@3000	*Alum	5	Ste	AC	Str	AC
Jordan G Ninety 8	3700	125–131	Con	V	Pines	L	8	3 x4¾	268.6	5.10	28.9	85@3200	*Alum	5	Ste	Ste	Str	AM
La Salle 345	——	134	Own	V	Yes	LV	8	3⅜x4⅛	353	5.35	36.45	95@3000	CI	3	—	Gas	Own	—
Lincoln	5030	136	Own	V	——	LV	8	3½x5	384	4.83	39.2	90@2800	Alum	5	Pur	Own	Str	Un
Marmon-Roosevelt	2833	*172	Own	V	Dole	L	8	2⅞x4¼	201.9	5.25	24.2	77@3400	Alum	5	—	—	Str	AC
Marmon Eight 69	3103	*180	Own	V	——	L	8	2⅞x4¼	211.2	5.50	25.4	84@3400	Alum	5	AC	AC	Sch	AC
Marmon Eight 79	4028	*191	Own	V	Pines	L	8	3⅜x4¾	303.2	5.50	32.5	110@3400	Alum	5	AC	AC	Sch	AC
Marmon Big Eight	4363	*202	Own	V	Pines	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	AC	AC	Sch	AC
Nash Six-60	2800	114¼	Own	V	Bish-Bab	L	6	3⅛x4⅜	201.3	5.00	23.4	60@2800	*Alum	7	AC	AC	Car	AC
Nash Eight-70	3000	116¼	Own	V	Bish-Bab	L	8	2⅞x4⅜	227.2	5.00	26.4	75@3200	*Alum	9	AC	AC	Car	AC
Nash Eight-80	3360	121	Own	V	Pines	O	8	3 x4¼	240	5.25	28.8	85@3200	*Alum	9	AC	AC	Mar	AC
Nash Eight-90	4000	124-133	Own	V	Pines	O	8	3¼x4½	298.6	5.25	33.8	115@3600	*Alum	9	AC	AC	Str	AC
Oakland V-8	3205	117	Own	V	Yes	H	8	3⅛x3⅜	251.0	5.00	37.8	85@3000	S St	3	—	AC	Mar	AC
Oldsmobile	2940	113½	Own	V	——	L	6	3⅜x4⅛	197.5	5.20	24.4	62@3000	CI	4	AC	AC	John	AC
Packard 826-833	4479	127½-134½	Own	V	——	L	8	3⅞x5	320.0	—	32.5	100@3200	*Alum	9	—	—	Own	—
Packard 840-845	4955	140½-145½	Own	V	——	L	8	3½x5	384.8	—	39.2	120@3200	*Alum	9	—	—	Own	—
Peerless St. 8	3642	118	Own	V	Bish-Bab	L	8	2⅞x4¾	246.0	5.00	26.45	85@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Master 8	4521	125	Own	V	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Custom 8	4766	138	Own	V	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Pierce-Arrow C	4523	132	Own	V	Yes	L	8	3⅜x4¾	340	5.07	36.45	115@3000	*Alum	9	Yes	Yes	Str	Un
Pierce-Arrow B	4304	134	Own	V	Yes	L	8	3½x4¾	366	5.07	39.2	125@3000	*Alum	9	Yes	Yes	Str	Un
Pierce-Arrow B	4713	139	Own	V	Yes	L	8	3½x4¾	366	5.07	39.2	125@3000	*Alum	9	Yes	Yes	Str	Un
Pierce-Arrow A	4831	144	Own	V	Yes	L	8	3½x5	385	5.07	39.2	132@3000	*Alum	9	Yes	Yes	Str	Un
Plymouth	2595	*167	Own	V	——	L	4	3⅝x4⅜	196	4.60	21.03	48@2800	*Alum	3	—	Yes	Car	—
Pontiac	2745	110	Own	V	Var	L	6	3⅛x3⅞	200.0	4.90	26.3	60@3000	S St	3	—	AC	Mar	Yes
Reo Royale	*4650	135	Own	V	Pines	L	8	3¾x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Flying Cloud	4375	130	Own	V	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Flying Cloud	3950	125	Own	V	Pines	L	6	3⅜x5	268	5.30	27.34	80@3200	Alum	7	Han	—	Sch	Un
Studebaker Six	2950	114	Own	V	Dole	L	6	3¼x4⅛	205.3	5.20	25.4	70@3200	CI	4	Han	Ste	Sch	—
Studebaker Dict. 8	3155	114	Own	V	Dole	L	8	3⅛x3⅜	221.0	5.10	30.0	81@3200	*Alum	9	Pur	Ste	Str	AM
Studebaker Com. 8	3520	124	Own	V	Dole	L	8	3⅛x4¼	250.4	5.20	30.0	101@3200	*Alum	9	Han	Ste	Str	AM
Studebak'r Pres. 80	4230	130	Own	V	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Studebak'r Pres. 90	*4360	136	Own	V	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	—	Str	AM
Stutz LA	4320	127½	Own	—	Bish-Bab	O	6	3⅜x4½	241.5	5.00	27.3	85@3150	*Alum	7	Wal	AC	Zen	Un
Stutz MA	4918	134½	Own	—	Yes	O	8	3⅜x4½	322	5.00	36.5	113@3300	*Alum	9	Wal	Gas	Zen	AM
Stutz MB	4863	145	Own	—	Yes	O	8	3⅜x4½	322	5.00	36.5	113@3300	*Alum	9	Wal	Gas	Zen	AM
Viking Eight	3620	125	Own	V	Yes	H	8	3⅜x3⅝	259.5	5.10	36.5	81@3200	CI	3	Own	AC	John	AC
Whippet 96 A	2673	103¼	Own	V	No	L	4	3⅛x4¾	145.7	5.40	15.6	40@3200	CI	3	No	No	Til	No
Willys-Six 98-B	2623	110	Own	V	Var	L	6	3¼x3⅞	193	5.56	25.3	65@3400	CI	4	No	Til	Til	Til
Willys 8-80	3076	120	Own	V	Var	L	8	3¼x4	245.4	5.40	31.25	80@3200	CI	5	No	Til	Til	Til
Willys-Knt. 66-B	3868	120	Own	V	Var	K	6	3⅜x4¾	255	5.50	27.3	87@3200	*Alum	7	Ski	Til	Til	Til
Willys-Knight 87	3001	112½-115	Own	V	Var	K	6	2⅞x4⅜	177.9	5.88	20.7	55@3000	*Alum	7	Ski	Til	Til	Til

KEY TO ABBREVIATIONS

Weight—*Studebaker 7-pass. sedan. †On Elcar 140 4,375 pounds. ‡Austin Standard 2-passenger coupe. **Hupmobile model H weighs 3955 and model U 4225. *Reo Royalle, 125-inch. W. B., weighs 3,950 pounds.

Wheel Base—*Over all length of chassis instead of wheel base, which manufacturers refuse to give.

Engine Make—Con, Continental; Lyc, Lycoming.

Fan Belt Type—V, V-type; F, flat.

Thermostat—Bish-Bab, Bishop & Babcock; Dole, Dole Valve Co., Chicago, Ill.; Pines, Pines Winterfront; Var, various makes.

Valve Arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; LV, V-type L head.

Compression Ratio—*Air cooled. †Thermo syphon water circ-*Optional on the Auburn.

Piston Material—*Alum, aluminum with invar struts; Alum, aluminum alloy; CI, cast iron; S St, semi-steel.

Oil Purifier—Pur, Purolator; Wal, Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas, Gascolator; Ste, Stewart-Warner; Til, Tillotson.

Carbureter—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL, Detroit Lubricator; John, Johnson; Til, Tillotson.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Un, United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Ram, Ramsey; Whit, Whitney Chain; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; Del-R, Delco-Remy; N. E., North East; Dyn, Dyneto. *Nash—Indicates twin ignition.

*Bendix starter used.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company.

Gearset—War G., Warner Gear Company; Detr, Detroit Gear; Mun, Muncie Gear; WC, Warner Corporation.

*Three or four speed gear sets as shown are available for either model.

Universals—Un P, Detroit Universal Products Company; Spic, Spicer Manufacturing Corporation; MM, Mechanics Universal Joint Company, Rockford, Ill.; Cle, Cleveland.

Rear Axle—Col, Columbia; Sal, Salisbury; Cla, Clark Equipment Company; Tim, Timken.

Ratio—Optional on the Auburn.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company, Detroit, Mich.; War, Warner.

Brakes—H, hydraulic; M, mechanical; SD, steeldraulic; Bendix, Bendix Brake Corp.

Rear Springs—S, semi-elliptic; E, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insullator Company; Faf, Fafnir Bearing Company; O-N, O-N Spring Shackle Company; Belf, Belflex Corporation.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Alem A, Alemite automatic; Bijur, Bijur Lubricating Corp.; Bijur A, Bijur automatic centralized; Cen, Central magazine; Far, Farval.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Gear Set and Speeds	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Spring Rear	Springs Shackles	Chassis Lubric.	Tires
Auburn 6-85	Link	Del-R	*Del-R	Long	War-G 3	Un P	Col ½	*4.9	H	Ross	S 56¾	Own	Bijur	18x5.50
Auburn 8-95	Link	Del-R	*Del-R	Long	War-G 3	Un P	Col ½	*4.7	H	Ross	S 56¾	Own	Bijur	18x6.00
Auburn 8-125	Link	Del-R	*Del-R	Long	Detr 3	Un P	Col. ½	*4.45	H	Ross	S 56¾	Own	Bijur	18x6.50
Austin	Gear	Aut-L	*Aut-L	Rock	War-G 3	Spic	Sal	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 8-50	Tex	Del-R	Del-R	Own	Own 3	Own	Own ½	4.54	M	Sag	S 54½	Tryon	Al-Z	18x5.25
Buick 8-60	Tex	Del-R	Del-R	Own	Own 3	Own	Own ¾	4.45	M	Sag	S 55¼	Own	Al-Z	19x5.50
Buick 8-80	Tex	Del-R	Del-R	Own	Own 3	Own	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Buick 8-90	Tex	Del-R	Del-R	Own	Own 3	Own	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Cadillac V-8	Morse	Del-R	Del-R	Own	Own 3	Spic	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6.50
Cadillac V 12	Morse	Del-R	Del-R	Own	Own 3	Spic	Own ¾	——	Own-M	Own	S 58	Own	Alem	19x7.00
Cadillac V-16	Morse	Del-R	Del-R	Own	Own 3	Spic	Own ¾	4.39	Own	Own	S 60	Own	Alem	19x7.00
Chevrolet	Var	Del-R	*Del-R	Own	Own 3	Own	Own ½	3.82	M	Own	S 54	Tryon	Alem	19x4.75
Chrysler 6	Morse	Del-R	Del-R	Own	Own 3	Un P	Own ½	4.60	H	War	S 53¾	Tryon	Al-Z	19x5.00
Chrysler 70	Morse	Del-R	Del-R	Own	Own 4	Un P	Own ½	3.82	H	War	S 57¾	Rub B	Al-Z	18x5.50
Chrysler 66	Morse	Del-R	Del-R	Own	Own 3	Un P	Own ½	4.70	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Chrysler 8	Morse	Del-R	Del-R	—	Own 4	—	Own ½	4.10	H	War	S 54⅝	——	Al-Z	18x5.50
Chrysler Imperial 8	Morse	Del-R	Del-R	—	Own 4	—	Own ½	3.81	H	Ross	S 57½	——	Al-Z	18x7.00
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	Detr 3	UnP&MM	Col F	4.41	H	Gem	S 62	Own	Bijur	18x7.00
De Soto 6	Var	Del-R	Del-R	Borg	Own 3	Un P	Own ½	4.6	H	Own	S 53¾	——	Al-Z	19x5.00
De Soto 8	Var	Del-R	Del-R	Borg	Own 3	Un P	Own ½	4.6	H	Own	S 54⅝	Rub B	Al-Z	19x5.25
Dodge 6 D D	Morse	Del-R	Del-R	Borg	Own 3	Un P	Own ½	4.9	H	War	S 53¾	Tryon	Al-Z	19x5.00
Dodge 8	Morse	Del-R	Del-R	Borg	Own 3	Un P	Own ½	4.6	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Durant 610	Morse	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	3.9	S D	Own	S 55	Tryon	Alem	19x4.75
Durant 612	Morse	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	4.4	S D	Own	S 55	Tryon	Alem	19x4.75
Durant 614	Morse	Aut-L	*Aut-L	Borg	Own 3	Spic	Own ½	4.4	S D	Own	S 55	Tryon	Alem	29x5.00
Durant 617	Morse	Aut-L	*Aut-L	Borg	Own 4	Spic	Own ½	3.72	S D	Own	S 55	Tryon	Alem	29x5.50
Elcar 75 A	Link	Del-R	*Del-R	Long	War-G 3	Spic	Sal ½	4.88	H	Ross	S 53½	Belf	Alem	29x5.25
Elcar 140 and 130	Link	Del-R	*Del-R	Long	War-G 4	Spic	Sal ½	3.46	H	Ross	S 57	Belf	Alem	18x7.00
Elcar 96	Link	Del-R	*Del-R	Long	War-G 4	Spic	Sal ½	3.92	H	Ross	S 56	Belf	Alem	19x6.00
Essex Super Six	Morse	Aut-L	*Aut-L	Own	Own 3	Spic	Own ½	5.41	Bendix	Gem	S 54⅝	Own	Alem	19x5.00
Ford A	Cel	Own	*Own	Own	Own 3	Own	Own ¾	3.7	M	Gem	S Tr	Own	Al-Z	19x4.75
Franklin Trans.	Whit	Del-R	*Del-R	Br-L	War-G 4	Spic	Own ½	4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin De Luxe	Whit	Del-R	*Del-R	Br-L	War-G 4	Spic	Own ½	4.73	H	Gem	El 42	None	Al-Z	19x6.50
Gardner 136	Link	Del-R	*Del-R	Borg	War-G 4	Spic	Col ½	4.45	H	Ross	S 54	O-N	Alem	29x5.50
Gardner 148	Link	Del-R	*Del-R	Borg	Own 4	Spic	Col ½	4.45	H	Ross	S 54	O-N	Alem	29x5.50
Gardner 158	Link	Del-R	*Del-R	Borg	War-G 3	Spic	Col ½	4.45	H	Ross	S 57	O-N	Alem	30x6.50
Graham Std. 6	Link	Del-R	*Del-R	Long	War-G 3	Un P	Sal ½	4.7	H	Ross	S 54	Tryon	Al-Z	19x5.25
Graham Spl. 6	Link	Del-R	*Del-R	Long	War-G 4	Un P	Sal ½	3.91	H	Ross	S 54	Tryon	Al-Z	18x5.50
Graham Std. 8	Link	Del-R	Del-R	Long	W C 3	Un P	Sal ½	4.45	H	Ross	S 56	Rub B	Al-Z	18x6.00
Graham Spl. 8	Link	Del-R	Del-R	Long	War-G 4	Un P	Sal ½	3.90	H	Ross	S 56	Rub B	Al-Z	18x6.00
Graham Cust. 8	Link	Del-R	Del-R	Long	War-G 4	Un P	Cla ½	3.92	H	Ross	S 58	Own	Bijur	19x6.50
Graham Cust. 8	Link	Del-R	Del-R	Long	War-G 4	Un P	Cla ½	3.92	H	Ross	S 58	Own	Bijur	19x6.50
Hudson Greater 8	Morse	Aut-L	*Aut-L	Own	Own 3	Spic	Own ½	4.7	Bendix	Gem	S 54⅝	Own	Alem	18x5.50
Hupmobile Cen 6	Morse	Aut-L	*Aut-L	Borg	Detr 3	MM	Sal ½	4.70	S D	Ross	S 53	Tryon	Al-Z	19x5.50
Hupmobile Cen 8	Morse	Aut-L	*Aut-L	Borg	Detr 3	Un P	Sal	4.55	S D	Ross	S 52¾	Rub B	Al-Z	19x5.50
Hupmobile C	Morse	Aut-L	*Aut-L	Long	Detr 3	Un P	Own ½	4.55	S D	Ross	S 54	Own	Alem	19x6.00
Hupmobile H and U	Morse	Aut-L	*Aut-L	Long	Detr 3	Un P	Own ½	4.07	S D	Ross	S 57	Own	Alem	19x6.50
Jordan St. Line 80	Link	Aut-L	*Aut-L	Long	War-G 3	Cle	Col ½	4.9	H	Gem	S 55¾	O-N	Alem	28x5.50
Jordan G. Ninety 8	Link	Aut-L	*Aut-L	Long	War-G 3	Cle	Col ½	4.25	H	Gem	S 55¾	O-N	Alem	30x6.00
La Salle 345	Morse	Del-R	Del-R	Own	Own 3	Spic	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6.50
Lincoln	Morse	Del-R	Del-R	Own	Own 3	Spic	Tim F	4.58	Bendix	Own	S 60	Own	Alem	20x7.00
Marmon-Roosevelt	Diam	Del-R	*Del-R	Rock	War-G 3	Spic	Sal ½	4.9	Bendix	Ross	S 54⅛	Tryon	Al-Z	19x5.50
Marmon Eight-69	Diam	Del-R	*Del-R	Rock	War-G 3	Spic	Sal ½	4.9	Bendix	Ross	S 56⅜	Rub B	Al-Z	19x5.50
Marmon Eight-79	Diam	Del-R	*Del-R	Rock	Detr 3	Spic	Sal ½	4.7	Bendix	Ross	S 60	Rub B	Al-Z	19x6.00
Marmon Big 8	Diam	Del-R	*Del-R	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Al-Z	19x6.50
Nash Six-60	Cel	Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	5.1	S D	Ross	S 50⅞	Tryon	Alem	19x5.00
Nash Eight-70	Diam	Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	5.1	S D	Ross	S 50⅞	Tryon	Bijur A	19x5.25
Nash Eight-80	Diam	*Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	4.7	S D	Gem	S 55	Tryon	Bijur A	18x5.50
Nash Eight-90	Diam	*Aut-L	*Aut-L	Borg	Own 3	Own	Own ½	4.5	Bendix	Gem	S 56¾	Own	Bijur A	19x6.50
Oakland V-8	Morse	Del-R	Del-R	Own	Own 3	MM	Own	4.42	M	Sag	S 54½	Tryon	Al-Z	28x5.50
Oldsmobile	Var	Del-R	Del-R	Borg	Mun 3	Un P	Own ½	4.54	Own	Sag	S 54½	Tryon	Alem	28x5.25
Packard 826-833	Morse	Dyn	*Dyn	—	Own 4	—	Own ½	——	M	Own	S 60½	——	Bijur	19x6.50
Packard 840-845	Morse	Dyn	*Dyn	—	Own 4	—	Own ½	——	M	Own	S 60½	——	Bijur	19x7.00
Peerless St. 8	Link	Aut-L	*Aut-L	Rock	War-G 3	Spic	Sal ½	4.7	Bendix	Ross	S 56⅜	Rub B	Alem	29x5.50
Peerless Master 8	Link	Aut-L	*Aut-L	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless Custom 8	Link	Aut-L	*Aut-L	Rock	War-G 4	Spic	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow C	Morse	Del-R	Del-R	Long	Own 4	Spic	Own ½	4.58	Bendix	Gem	S 60	Faf	Al-Z	19x6.50
Pierce-Arrow B	Morse	Del-R	Del-R	Long	Own 4	Spic	Own ½	4.08	Bendix	Gem	S 60	Faf	Al-Z	18x7.00
Pierce-Arrow B	Morse	Del-R	Del-R	Long	Own 4	Spic	Own ½	4.42	Bendix	Gem	S 60	Faf	Al-Z	18x7.00
Pierce-Arrow A	Morse	Del-R	Del-R	Long	Own 4	Spic	Own ½	4.42	Bendix	Gem	S 60	Faf	Al-Z	18x7.00
Plymouth	Cel	Del-R	Del-R	Rock	Own 3	Own	Own ½	4.37	H	War	S 53⅝	Tryon	Al-Z	19x4.75
Pontiac	Morse	Del-R	Del-R	Own	Own 3	MM	Own	4.42	M	Sag	S 54	Tryon	Al-Z	29x5.00
Reo Royale	Morse	Del-R	Del-R	Long	Own 3	Un P	Own ½	4.07	H	Ross	S 57¼	Own	Far	6.50x17
Reo Flying Cloud	Morse	Del-R	Del-R	Long	Own 3	Un P	Own ½	4.07	H	Ross	S 57½	Own	Far	6.50x18
Reo Flying Cloud	Morse	Del-R	Del-R	Long	Own 3	Un P	Own ½	4.42	H	Ross	S 55¾	Own	Al-Z	6.50x17
Studebaker Six	Whit	Del-R	*Del-R	Long	Own 3	Spic	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Dict. 8	Var G	Del-R	*Del-R	Long	War-G 3	Spic	Own ½	5.11	Bendix	Ross	S 54	Tryon	Al-Z	19x5.25
Studebaker Com. 8	Var G	Del-R	*Del-R	Long	Own 3	Spic	Own ½	4.73	Bendix	Ross	S 56	Faf	Al-Z	19x6.00
Studebaker Pres. 80	Var G	Del-R	Del-R	Long	Own 3	Spic	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Studebaker Pres. 90	Var G	Del-R	Del-R	Long	Own 3	Spic	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Stutz LA	Link	Del-R	Del-R	Borg	Detr 4	Un P	Sal ½	4.75	H	Gem	S 60	Qwn	Bijur	31x6.00
Stutz MA	Link	Del-R	Del-R	Long	Detr 4	MM	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	32x6.50
Stutz MB	Link	Del-R	Del-R	Long	Detr 4	MM	Tim ½	4.5	H	Gem	S 62¼	Own	Bijur	32x7.00
Viking Eight	Whit	Del-R	Del-R	Borg	Mun 3	MM	Own ¾	4.63	Bendix	Sag	S 58	Tryon	Alem	30x6.00
Whippet 96 A	Var	Aut-L	Aut-L	Borg	Own 3	MM	Own ½	4.55	Bendix	Own	S 40½	Tryon	Alem	19x4.75
Willys-Six 98 B	Var	Aut-L	Aut-L	Borg	Own 3	MM	Own ½	4.60	Bendix	Own	S 49¾	Tryon	Alem	19x5.00
Willys 8-80	Link	Aut-L	Aut-L	Borg	Own 3	MM	Own ½	4.60	Bendix	Ross	S 56	Tryon	Alem	19x5.50
Willys-Knight 66 B	Link	N E	N E	Rock	Own 3	MM	Own ½	4.60	Bendix	Ross	S 57½	Own	Bijur	19x6.00
Willys-Knight 87	Link	Aut-L	Aut-L	Rock	Own 3	MM	Own ¼	4.89	Bendix	Own	S 53	Tryon	Alem	19x5.50

DEALER DOINGS

NEW FORD DEALERSHIP OPENS IN TRENTON, N. J.

Trenton, N. J., Dec. 5.—The Trent Motor Company, with sales and service station at 2053 South Broad St., this city, opened today as a Ford dealership.

S. SYMONS BUYS VALLEY MOTOR CO.

Auburn, Wash., Dec. 5.—S. Symons has purchased complete ownership of the Valley Motor Company of this city from George Sparks. Symons plans to remodel the plant immediately.

STUDEBAKER SALES IN LOUISVILLE GAIN

Louisville, Ky., Dec. 5. — The Studebaker Sales Company of Kentucky, distributor and holder of the local dealership for Studebaker, in offering a special sale of used cars, commented on the fact that for the past four months the people of Louisville and Jefferson county have purchased more Studebakers than any other make, with the exception of Fords and Chevrolets, resulting in more used cars than desired. Five-day trials of used cars are offered, with present owner's car taken in trade.

BOSTON WHIPPET-KNIGHT OUT OF RETAIL FIELD

Boston, Mass., Dec. 5.—Announcement is made that the Boston Whippet-Knight Corporation is retiring from the retail business and will consolidate all its used car stock, its service station and salesrooms at 1113 Commonwealth Ave., closing its salesrooms, maintained for a number of years, at 553 Commonwealth Ave.

ELLIS GREEN BUYS GULF COAST BUICK CO.

Dallas, Tex., Dec. 5 (UTPS).—The Gulf Coast Buick Company at Galveston, Buick dealership, has been purchased by Ellis Green, for fifteen years with the Buick organization at San Antonio.

DROWN CHEVROLET CO. MOVES IN MERIDEN

Meriden, Conn., Dec. 5.—Drown Chevrolet Company has moved into larger quarters at 93 Colony St., where the sales and service departments will be consolidated.

NOTICE

Please see the fifth column to the left of this advertisement giving steering gear information. Notice the outstanding Ross predominance. The actual figures are:

ROSS 39

NEAREST Competitor 17

SECOND Competitor 10

THIRD Competitor 7

Build Their Own 15

There is only one CAM & LEVER Steering Gear

ROSS

Cam & Lever Steering

Motion Pictures Reveal Secret of Engine Knock During Combustion

(Continued from Page 6)

progress of the flame across the combustion chamber.

"From the pictures of normal or non-knocking combustion it could be seen, first, that the flame moves at a finite, but not at a uniform velocity; and, second, that it takes about forty degrees of engine revolution to cross the chamber. This means that, for a car running thirty miles per hour, the combustion of the charge takes only about four one-thousandths of a second to complete itself.

"The photographs of knocking combustion show how events differ from normal when detonation or knock is present. Then the flame starts off just as before, and proceeds for a while at a perfectly normal rate. But when it reaches some point in its progress, then its rate becomes substantially infinite. In other words, it appears to jump instantly from that point to the end of the combustion chamber. As it does so, it projects a flash of intensified luminosity clear back through the whole combustion chamber.

"It is this combustion of a considerable portion of the charge at a rate that is substantially infinite which is the thing called knock. The differences in flame movement that occur when there is knock are confined to the latter part of the burn. The intensity of detonation is determined by the amount or the portion of the charge that is involved in this latter and extremely rapid combustion.

"The instantaneous flame spread that occurs when there is knock is accompanied by a simultaneous and extremely rapid rise in cylinder pressure. This very rapid mounting of pressure produces a violent force in the cylinder that acts somewhat like a sudden blow from a hammer, as distinguished from the more gradual push that comes during non - knocking combustion. This, then, is what happens when the engine of your car knocks."

Another investigation described by Mr. Boyd, the work of Wheeler G. Lovell and John M. Campbell of the General Motors research laboratories, dealt with the chemical composition of anti-knock hydrocarbons.

Results of the research on paraffin hydrocarbons showed that the larger the molecular size of a straight-chain hydrocarbon, the greater its tendency to knock. The anti-knock quality of a paraffin hydrocarbon is improved by each additional methyl group added. For paraffin hydrocarbons of a given molecular size, the anti-knock quality is improved as the centralization of the molecule is increased.

"Thus, in the case of the heptanes," said Mr. Boyd, "the anti-knock quality goes up by stages from that of the straight-chain compound normal heptane, which is the worst of the heptanes, to that of the heptane of greatest possible centralized structure (2, 2, 3—trimethyl butane). From the systematic way in which it has classified these various paraffin hydrocarbons, it can be seen that the gasoline engine is indeed a discriminating analytical chemist."

An engine run on fuel composed of the most centralized possible heptane would, Mr. Boyd explained, have a compression ratio four times as high as that of an engine run on normal heptane.

Mr. Boyd also praised the combined cracking and hydrogenation process now being developed by the Standard Oil Company of New Jersey in the manufacture of motor fuels.

"It is said that by this process a barrel of gasoline can be made from a barrel of crude oil, and that, furthermore, the gasoline can be made of good anti-knock quality," said Mr. Boyd. "Because coal or oil shale or even old houses and barns can be utilized in this process just as well as oil, this hydrogenation process offers the definite assurance of a continuous supply of motor fuel for generations to come. It is, accordingly, one of the outstanding chemical developments of the present century."

Stewart-Warner Fuel System

(Continued from Page 6)

and lift the valve to provide a free passage between tank and pump.

A further useful purpose served by this valve is that it automatically seats upon application of car brakes and thereby completely obviates disturbance of fuel flow control by the then relatively high pressures at the forward end of the fuel line.

The Carburetor

The carburetor portion of this system embodies several important advances in carburetor design.

The form given the air passage is that resulting in completely symmetrical flow of air about the outlet axis of the carburetor. Across the throat is a "bridge" of steamlined cross section, from the upper sharp edge of which the fuel enters the air stream as a fine spray, widely and symmetrically diffused in the air stream. Because of the behavior of the air stream itself and the immediate diffusion of finely divided fuel in it, it is possible to employ throat areas much in excess of those permissible in ordinary carburetors and makes the carburetor exceptionally free in the matter of intake pressure drop, it is claimed.

Incorporated in the fuel metering control system of an automatically actuated auxiliary jet which comes into action at and above .8 load and enriches the mixture to maximum power proportions. When running at the smaller loads, the mixtures are kept relatively lean.

The control of accelerating fuel in the carburetor that forms a portion of this system of fuel feeding has been developed so that when accelerating the mixture is momentarily enriched to approximately maximum power proportions.

The means whereby this control of accelerating fuel is accomplished is a pair of diaphragm pumps, one on each side of the carburetor. Each pump chamber has continuous flow of fuel through it by way of a calibrated orifice leading through body passages, to the throat bridge. Fuel enters these pump chambers, from the constant level fuel riser chamber, through large free check valves.

One of these diaphragms follows, in its motion, the changes of pressure in the intake above the throttle valve of the carburetor, ejecting excess fuel upon rise in pressure at that point. The other is mechanically actuated by a cam on the throttle lever spindle, to supply extra fuel as the throttle is opened. In both cases the supplying of extra fuel by these pumps ceases with stable running.

A portion of the general control of accelerating fuel delivered by the pumps is accomplished by the relative sizes of the two metering jets leading from the pump chambers to the throat bridge.

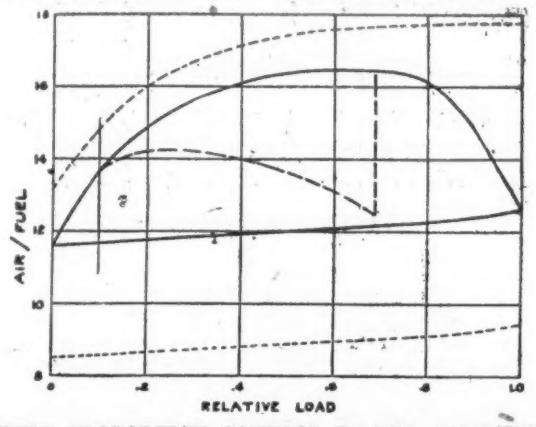
The metering jets are of the thin plate orifice form and thus have almost negligible temperature coefficients, i. e., the steady running mixture proportions are subject to very small changes with temperature variations.

In the carburetor, to control the accelerating fuel supply inversely with the general temperature of the engine, a pair of thermo-responsively operated by-passes are used, one in each pump chamber, through which portions of the possible accelerating fuel are normally returned to the riser chamber, and thus diverted from the carburetor throat, in amounts that are less the lower the temperature in the pump chambers.

The pump diaphragm actuated by intake pressure changes is also employed to control the automatically actuated auxiliary jet for enrichment of the mixture to maximum power proportions at and approaching full load. As it moves inward with rise of intake pressure it ultimately opens a small valve, thus suitably increasing the effective area of fuel flow controlling passage between throat bridge and constant level fuel riser.

ventional carburetor (wherein a lowering of the fuel temperature causes a lowering of the fuel level); and compared with the performance of a carburetor uncompensated in this respect, it results in an apparently much reduced warming up period and in much sweeter starting and handling when cold. It, together with the thermo-control of accelerating fuel completely obviates the need for, or desirability of, seasonal adjustment.

As an adjunct, for use in warming up in cold weather, a dash con-



MIXTURE PROPORTION CONTROL IN THE STEWART-WARNER CARBURETOR—This diagram shows, in the upper solid line of the closed figure, the standard metering control as embodied in the carburetor, and brings out clearly how the mixture is enriched to maximum power proportions at and beyond about the .8 load, the maximum power proportions being represented by the lower straight, solid line of the closed figure. The dash line within the closed figure shows the general order of variation in mixture strength during an acceleration, in this case from .1 to about .7 load. The lightly dotted lines, above and below, show respectively the upper and lower mixture limits for completely steady firing

The whole operation of the carburetor is automatic, and the mixture proportions are controlled by the sizes of the fixed orifices leading from pump chambers to throat bridge.

In the operation of this carburetor all the fuel passing to the engine at all times issues from the fuel discharge opening in the throat bridge. It is thus always under direct control of the stream of air aspirated by the engine and as a result there are no "holes" or "flat spots" in the behavior of the carburetor.

The sole adjustment provided is the height of fuel level in the constant level riser chambers. A further refinement in compensation for temperature changes, seasonal or otherwise, is incorporated in the fuel level governing parts. At 0° F. the level stands at .060 to .065 inch higher than at 60° F. This is the reverse of what happens in a conventional carburetor (wherein a lowering of the fuel temperature causes a lowering of the fuel level); and compared with the performance of a carburetor uncompensated in this respect, it results in an apparently much reduced warming up period and in much sweeter starting and handling when cold. It, together with the thermo-control of accelerating fuel completely obviates the need for, or desirability of, seasonal adjustment.

As an adjunct, for use in warming up in cold weather, a dash controlled pin is provided, the function of which is suitably to enrich the steady running mixtures throughout the whole range of operation. The control exercised by this pin is such that the choke is used only for initial starting.

To meet special conditions, two modifications of the standard Stewart-Warner electric fuel system are offered. In each the fuel pump is located in the rear tank and employs the same electric pump mechanism as described.

A general design of carburetor, which does not include the means whereby fuel is supplied to it, completes the line. It is available in down-draft or up-draft types and may be used with any of the conventional fuel feed systems. The only difference between this carburetor and the complete fuel feeding system is in the substitution of a directly actuated fuel admission valve for the pump regulator contacts.

MARTIN CAR TO BE MADE BY M. P. MOLLER COMPANY

Hagerstown, Md., Dec. 5.—A new bantam automobile, the Martin car, is to be manufactured by the M. P. Moller Motor Car Company here. Negotiations have been completed between the company and the Martin Motors, Inc., of Washington, D. C., for the manufacture of the new diminutive cars and work is already under way at the local plant for the first demonstrators.

Officials of the Martin Motors announced that Hagerstown had been selected for the manufacture of the new cars because of its splendid transportation facilities, rates and tariffs and that the Moller Company, by reason of its long established reputation in the construction of automobiles, had been selected as manufacturing agents.

H. M. Carpenter is the engineer at the local plant, in charge of production. He is assisted by C. M. Aument, formerly factory manager of the Fokker Aircraft factory. Charles Adler, who for ten years was chief body designer for the Brewster Rolls-Royce, will supervise the body construction.

ALLEGHENY STEEL MAKES SHIPMENTS TO FORD CO.

Tarentum, Pa., Dec. 5.—The Allegheny Steel Company of Brackenridge, near here, is shipping to the Ford Motor Company of Detroit an average of eighteen cars of fabricated steel for automotive purposes. The company is the producer of a new non-rust white metal that has been received with favor in the motor industry.

STEEL TREATY SOCIETY AT N. J. HEARS HEPBURN

Newark, N. J., Dec. 5.—The design and construction of furnaces and the proper fuels to burn in each were described by William Hepburn, vice-president of the Surface Combustion Company, Toledo, to members of the New Jersey Chapter, American Society for Steel Treating, at the Berwick Hotel.

It was the fifteenth meeting of the chapter and more than 150 were present. H. D. McKinney of the Driver-Harris Company, Harrison, presided. He told the members that the chapter, the youngest in the country, was already seventh in size and held the record for numbers in attendance at each session.

A motion picture, prepared by the Baltimore Copper Mills, showing copper from the ore to the ingot, was shown. A dinner preceded the meeting and technical talk.

WAYNE COUNTY CAR SALES DECLINE 15%

Detroit, Dec. 5.—New passenger car registrations in Wayne county for November totaled 1,768, as compared with 2,094 in the preceding month, a decrease of 16 per cent., and 2,532 in November, 1929, a drop of 30 per cent. Registrations of new commercial cars for November were 409 against 415 for October and 364 in the same month last year. Comparison with November, 1929, shows an increase of 12 per cent.

For eleven months, 1930 new passenger car registrations were 60,399, while the 1929 period showed 111,380.

MANAGEMENT ABROAD SUBJECT OF A.S.M.E. DISCUSSION

New York, Dec. 5.—The fourth day of the meeting of the American Society of Mechanical Engineers, held yesterday, was devoted to meetings of the power division, management division, aeronautics division, special research committee on cutting of metals, oil and gas power division and the special research committee on boiler furnace refractories.

Wallace Clark, Walace Clark & Co., New York, speaking on the subject of "American Management in Europe," said: "In every large European country there is a national organization for the advancement of science in management. These groups have received financial support from their respective governments, which have been anxious to obtain the advantages of good management in their struggle for export markets. The work of collecting information and broadcasting it to technicians, managers and the public at large, as well as the translation of books and papers on management subjects, has been done by these national groups. The International Management Institute in Geneva has shouldered the difficult task of co-ordinating the work of these national organizations and stimulating the free interchange of information among them and the American groups.

"Four international management congresses have been held in Europe, presided over by such statesmen as Mazaryk, Mussolini and Tardieu.

"At the present time there is in Europe a more general understanding of the fact that conditions are changing. Industrialists are realizing that the acceleration of change which has taken place since the great war cannot be expected to slow down. They are, therefore, reorganizing their businesses not only to fit changed conditions, but to anticipate further changes."

KINGS COUNTY BUICK, INC., NEW AND USED CAR SALES INCREASE IN NOVEMBER

Brooklyn, N. Y., Dec. 5.—Kings County Buick, Inc., the only authorized Buick dealer in Brooklyn, reported increases in the three major departments of its business for the month of November.

New car deliveries for the month were 26 per cent. higher than for the same period of 1929. Used car deliveries showed an increase of 60 per cent. over the total deliveries for November, 1929.

Service departments reported that during the month a total of 1,875 service jobs were handled by the three service stations controlled by the company, which was an increase of 33 per cent. over November, 1929.

NEW CHEVROLET TRUCK NOW BEING DELIVERED

Detroit, Dec. 5.—Dealers are now delivering the new Chevrolet 1½-ton 157-inch truck chassis. Among its outstanding features is a new rugged frame, over eighteen feet long with space for a twelve-foot body behind the cab.

The frame is seven inches deep. Dual wheels, first introduced in August on the previous model, are incorporated in the new model. A new truck clutch with a ten-inch disk, a heavy duty rear axle, a new front axle with strengthened king pins and spindles add to the endurance of the new model.

E. L. CASWELL TO SAIL FOR THOMPSON PRODUCTS

Cleveland, Dec. 5.—E. L. Caswell, export manager of Thompson Products Corporation, will sail for Europe to develop new markets and increase distribution in twenty-one important countries. Thompson export business in the last three years has increased 300 per cent., and the corporation now trades with fifty-one countries.

ROBERTS NASH MOTORS PROMOTES H. F. STEVENS

Philadelphia, Dec. 5.—H. F. Stevens, who for years has been associated in an executive capacity with the Roberts Nash Motors Company, 1235 North Broad St.